Sci-Tech News

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# SciTech News 68(2) - 2014

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# SciTech News

The Official Bulletin for the Chemistry, Engineering, and Science-Technology Divisions and the Aerospace Section of the Engineering Division and the Materials Research and Manufacturing Section of the Chemistry Division of the Special Libraries Association




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# SciTech News

## On the Cover

Despite its exquisitely realistic look, this is in fact not a real mushroom but only a papier-mache model of one, created in the late 19th century by the French scientific model-maker Dr. Louis Auzoux.

A collection of such botantical papier-mache models is currently on display at the Wagner Free Institute of Science in Philadelphia: http://www.wagnerfreeinstitute.org/syllabi%202013-14/Mushroom-Models.html

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**Columns and Reports**



**Division News**



**Reviews**



**Copy Deadline**

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## From the Editor

Jeremy Cusker

Greetings everyone.

For anyone who has been keeping track, I've been populating the covers of the newest editions of *SciTech News* with science- and technology-related images from Flickr. I'm able to use these images without too much difficulty because they have been tagged with Creative Commons Attribution licenses, which permits credited, non-commercial re-use of content. Merely doing a search of Flickr with keywords like "science" and selecting only content with non-commercial CC licenses applied to them turns up a wealth of content. Creative Commons has of course been around for a while but for anyone unfamiliar with the concept, I urge you to take a look: https://creativecommons.org/licenses/.

To update everyone on the progress of the archive (archives, actually) for *SciTech News*: as mentioned in postings on the WordPress site for the Science-Technology division, there are now two archives. The first is the established archive on Jefferson University, which covers from 1987 to the present. This archive is stable and is intended for long-term preservation. It is accessible here: http://jdc.jefferson.edu/scitechnews/.

One change made in that archive has been to begin uploading just a single file for each issue: A complete-issue PDF rather than many individual PDFs for reach article as well as one for the complete issue. We felt this was necessary for a savings of time and effort.

But we have also started a second, more 'lightweight' archive on the division WordPress site itself. This covers the past 10 years (2004 to 2014 as of the time of this issue) and is accessible here: http://bit.ly/1klXcHa.

We look forward to seeing everyone in Vancouver in June!

**What have you been doing lately?**

*SciTech News* wants to know! Please send us information about your awards, promotions, professional publications and presentations or other recognition. We'll publish your activities in *SciTech News*, bringing your news of our members' accomplishments to the wider SLA and library communities.

Send such information to Jeremy Cusker, jcusker4031@gmail.com by August 15 for publication in the next issue of *SciTech News*.

**Do you have a research project?**

*SciTech News* is interested in publishing refereed research articles on library science topics. If you would like to submit such an article for consideration for publication in *SciTech News*, please contact the editors for details on formatting and creating an anonymized manuscript for referee review.

# News from the Science-Technology Division

## Science-Technology Division Nevenka Zdravkovska, Chair

The objectives of the Science-Technology Division shall be to draw together those members of the Special Libraries Association having an interest in the role of library and information science as applied to the recording, retrieval and dissemination of knowledge and information in all areas of science and technology, and to promote and improve the communication, dissemination and use of such knowledge for the benefit of libraries and their users.'

Greeting Colleagues,

Hope you have already registered for the Vancouver Annual Conference, at the early discounted rate that ended April 11, 2014, and you are making preparations for your trip. We have a great program for you this year. As of this writing, room assignments have not been finalized, but hope they will be soon. We will post the final program on the SciTech website. The Annual Conference is a great opportunity to network with your colleagues, to learn some new skills, and to lean about the new trends in our profession. Hope to see many of you in Vancouver.

As announced earlier, this year the SciTech Division will conduct its first online Business meeting on May 15th at 12:00 pm (noon) EST. If you haven't registered already, please do so by going to the Registration Web Link: https://www1.gotomeeting.com/register/919922056. Hope many of you will be able to join us to hear about the Division's finances, plans, and to contribute with ideas for the future of our Division. In the past we had conducted these meetings during the Annual Conference, but we decided this time to try this venue.

As you make your plans in selecting programs you wish to attend at the Conference in June, I would like to bring your attention to the **SciTech Reception and Awards Ceremony**. The reception will take place on Sunday, June 8, 7:30-9:00 pm at Mahoney & Sons (at the Convention Centre). We have two generous sponsors – ***IEEE*** and ***Elsevier***. At this free event for DST members we will celebrate the 90th anniversary of our Division. Roger Beckman (DST Archivist) and his assistant Meg Knapke have put together an amazing slide show celebrating the 90 years of our Division. Enjoy finger foods and drinks while networking with your colleagues.

At the event we will be celebrating our award recipients. The Awards Committee, chaired by Janet Hughes, has already selected winners for two of the awards, Bonnie Hilditch International Librarian and Diane F. Foster International Library Student. See below details on the award recipients.

Each year we award the following awards:

- The **Bonnie Hilditch International Librarian Award**, sponsored by the Science-Technology and Engineering Divisions, is presented to a librarian outside of the United States and Canada. The purpose of the award is to provide an opportunity for a librarian outside of the United States and Canada to attend the annual Special Libraries Association (SLA) conference.
- The **Diane F. Foster International Student Award** provides an opportunity for a student outside of Canada and the United States enrolled in a graduate level LIS program or an early career librarian from the collaborating SLA Chapter to attend the annual Special Libraries Association (SLA) conference. In 2014 we partnered with the Australia/New Zealand Chapter. ***2014 Sponsor: Annual Reviews***
- The **Ann Koopman Sci-Tech Achievement Award** is the highest annual award presented by the Science-Technology Division and is reserved for those recipients whose professional work is marked by distinction and dedication to scientific and technical librarianship. The purpose of the award is to recognize those Division members who have made outstand-

ing contributions to the Division and/or to the literature of science and technology librarianship in the past 1 to 5 years. The 2014 recipient will be the first one to get this award after being renamed to the SciTech distinguished member Ann Koopman. In 2014, two of our valued members were selected to be winners. See below an excerpt of the nomination. ***2014 Sponsor: ASTM***

- The **S. Kirk Cabeen Travel Stipend Award** is offered to a library school student or first time conference attendee. This award is to be used toward expenses of attending the SLA Annual Conference. ***2014 Sponsor: SPIE***
- **Longevity Award** to long term SciTech Members.

**2014 Bonnie Hilditch International Librarian Award winner – Niamh Tumelty**

**Niamh Tumelty** is a Librarian in the Department of Engineering Library at the University of Cambridge, Cambridge, United Kingdom, since September 2013, but has worked in libraries since 2003. She earned an MSc in Econ Information and Library Studies from Aberystwyth University in 2013. She also has an H Dip in Education from Trinity College, University of Dublin, 2003 and a BA in Music with German from the National University of Ireland, Maynooth, 2002. Ms. Tumelty is a member of SLA and the Chartered Institute of Library and Information Professionals (CILIP) and is currently the New Professionals Support Officer for CILIP East Members' Network, for which she has organized several events. She has presented at conferences and workshops and has published on topics such as TeachMeet and merging CILIP branches and groups.

**2014 Diane K Foster International Library Student winner – Beth Wishart**

**Beth Wishart** is a Master of Information Studies student at the Victoria University of Wellington, Wellington New Zealand, since March 2012. She has a BSc in Psychology and Zoology, 2005, and a postgraduate diploma in Psychology, 2006, both from the University of Otago, New Zealand. She has worked in libraries since 2009, and is working at the Parliamentary Library of New Zealand, using ideas from her classes and readings in her day-to-day job. She has wide ranging interests, but is interested in using her science background to offer new ways of thinking as an information professional.

**2014 Ann Koopman Sci-Tech Achievement Award Winners – Mary Frances Lembo and James Manasco**

**Mary Frances Lembo** is a senior research Librarian at the Pacific Northwest National Laboratory – a multi-science research laboratory operated by Battelle for the US Department of Energy. Her responsibilities at the PNNL Technical Library include providing information and research assistance to PNNL staff in the areas of chemistry, materials science, national security, nuclear engineering and physics. She also provides training to library and laboratory staff with a number of library and other resources, including EndNote.

Mary Frances has been a member of SLA and the Science-Technology Division since 1994. She has served on the Student Relations Committee, chaired the Sci-Tech Division in 2005-2006, and currently is chair of the Professional Development committee.

Mary Frances graduated from the University of Washington with a master's in Library & Information Science. She has a BA in Elementary Education also from the University of Washington. Prior to joining PNNL in 1999, Mary Frances was a science reference librarian at the University of New Orleans in New Orleans, Louisiana.

**James E. Manasco** is the Engineering and Physical Sciences Librarian at the University of Louisville. He previously served as Head of Collection Development (2006-2013) after serving in both the Department of Special Collections and the Kornhauser Health Sciences Library (2003-2006). Prior to com-

ing to UofL, James served the University of Kentucky as Head of the Robert E. Shaver Library of Engineering for four years and as Natural Sciences Liaison Librarian at The Colorado College in Colorado Springs for three years. James got his start in Science Librarianship by serving as Head Technician at the UK Chemistry/Physics Library from 1991-1996. James holds both his MSLS and his BA in American History from the University of Kentucky. James has worked in libraries for over 26 years.

James has served as President of the Kentucky Chapter (twice) and Chair of the Science-Technology and Information Technology Divisions. He served as Chair of the association's 2010 Conference Advisory Council. He has also served as Chair of the Association's Nominating and Bylaws Committees. James received the 2007 Outstanding Chapter Member Award and the 2003-2004 Professional Award from the Kentucky Chapter. He received the 2010 Impossible Award from the Science-Technology Division for editing the multi-divisional bulletin *Sci-Tech News.* James was named a Fellow of SLA in 2010.

> *From Helen Josephine's nomination letter:* Over the past 10 years Mary Frances and James have developed and presented the Science and Engineering 101 program at the annual SLA Conference. These programs have included in-depth and comprehensive information for both new sci-tech librarians and seasoned professionals presented in an engaging and interactive format. Topics have included Alternative Energy, GIS/Remote Sensing, Marine Sciences, Nuclear Engineering, Mining and Meteorology, Materials Sciences, National Security, Agriculture. By popular demand, some topics have been repeated due to changes in the field and new resources. Both fee and free resources are evaluated and those attending the sessions are encouraged to contribute their knowledge and information about resources relevant to the topic. In addition, James and Mary Frances maintain a blog "Sci/Tech 101" linked from the Sci-Tech Division web page where session presentations are posted along with links to additional research sources.

**2014 S. Kirk Cabeen Travel Stipend Award Winner – Alesia Rudnitskaya**

A recent MLIS graduate from McGill University, **Alesia Rudnitskaya** has been leading the implementation of a digital asset management solution at Canadian National Railway Company in Montreal. She also holds a B.A. in Education and Modern Languages from a leading university in Belarus. Alesia has worked in Europe and Canada for major universities (McGill and Concordia) and corporations (CN and PwC). Her versatile professional experience spans teaching in schools and at the university level, conducting competitive intelligence research and data analysis, developing taxonomies and metadata schemas. A life-long learner and passionate teacher, she is enthusiastic about imparting knowledge and facilitating information discovery. Her interests span metadata and user-centered design as tools for enhanced access to information.

# A Special Dedication to Ann Koopman

*by Sheila L. Rosenthal*

When our Sci-Tech Division Chair, Nevenka Zdravkovska asked if I would like to write an article about Ann Koopman for Sci-Tech News I was delighted and replied that I would love to write a tribute to Ann. I had first met Ann Koopman when I joined the Sci-Tech Division in 2005 and she was Chair-Elect. I remember thinking what a nice friendship she had with Mary Frances Lembo who was the Chair of our Division in 2005. It was obvious to all of our Division members how much Mary Frances appreciated the enthusiastic help and support she received from Ann during her position as Chair. When I became Awards Chair in 2007 and Ann was Division Chair she could tell how nervous I was and she really stood by me in my new role. When I first arrived at the Awards breakfast ceremony I was told I would be given time to talk about the winners before presenting them with their awards. I panicked when I realized I had never asked them to send me their biographies. As soon as Ann learned of my dilemma she immediately came to my rescue by offering to go around with me to each winner asking them to write down a few words about themselves for my biography speeches. She also moved the award presentation announcements to the end of the ceremony's program to give me more time to prepare. Another panic point for me was the pronunciation of the name of our 2007 Bonnie Hilditch International Librarian Award winner from Ethiopia, Demisssew Tsigemelak Gebreyohannes. She pronounced the name several times for me until I was comfortable enough to make the attempt myself in front the audience.

I grew in my role as Awards Chair which thanks to Ann's support and encouragement I gained the confidence to continue to serve in for seven years. At the end of 2013 my confidence had grown to the point where I decided to apply for and won the position of Chair-Elect of our Division. I also attribute this additional gain in confidence to Ann's friendship. All during my work as Awards Chair, I was the recipient of several of Ann's suggestions for improving the Awards and called upon her for advice on numerous occasions, which she always cheerfully provided. One of her first award improvement suggestions was to add two additional Award categories to our previously established list and they were the awards for "longevity" and "retirement". Ann had a very keen sense of how important it is to acknowledge people and how much it means to them to attain these acknowledgements. The two new award categories were very well received by our members and many of them wrote back to me with messages of appreciation.

The next few paragraphs contain examples of Awards related questions sent to Ann and the valuable advice that she provided, as follows:

In 2010 our Division Chair, Hilary Davis sent the following message to Ann and several other members of our Division:

> *Sheila Rosenthal and I are a bit at a loss about something. One of our longevity award recipients this year (43 years as a Sci-Tech member, we think) has indicated that he expects to receive a pin during the conference. Sheila and I are not aware of a special pin that can be given to him. I've asked the Leadership listserv, but haven't heard from anyone with anything definitive, but someone suggested that there might be some sort of "generic SLA pin." Sheila has very nice certificates for all of the longevity award recipients (and other award recipients) that we intend to distribute one way or another. So, my question to you all: are you aware of a past practice for giving away pins and if so, do you know if that's something that we still do/should be doing?*

Ann replied as follows:

> *Christine is right - we've never given out any pins as awards, only certificates. We're cheap.*

*We did create Division pins many years ago as giveaways to ALL members and our vendor sponsors. I still have a couple if you want one of those.*

*They're plastic yellow triangles with the division's initials in blue, if memory serves. They're cheap, but clearly belong to the Division. Let me know, if so, and where to ship.*
*Otherwise, you could give the basic SLA pin - a small round purple pin with the S swirl on it. Check with HQ to make sure they would have one you could buy at the association store on site. They're not very expensive, but not associated with the Division.*

*This 43 year Longevity Award Winner is a nice man and has done a lot for the division, but I don't know that we should allow him to hold us up for particular goods, especially if it sets precedent for others in a similar category. He was overlooked one year because of SLA recordkeeping, so whatever we're doing this year is by way of consolation. I wonder whether he would be mollified by being asked to contribute an interview (i.e., we would interview him) or a guest editorial to the Sci Tech News?*
*--Ann*

Here is another question from Hilary Davis which I could not answer but to which Ann provided excellent advice:

*Hi Sheila - thanks for sending the example. I think that example represents one of the Special Recognition Awards, is that your understanding? What I'm referring to are recognition certificates to all the 2009 Advisory Council members for their service (not necessarily for their special contributions). Have you been involved in creating these recognition certificates for service? I'm cc'ing Ann Koopman to see if she has any advice as to how these kinds of service certificates have been created in the past.*
*Thanks*
*Hilary*

Here is Ann's reply:

*I'm always full of advice, which is worth what you pay for it %^)*

*To simply thank all advisory council members and document their service, the most appropriate form is a formal letter from the chair, which the recipients can add to their tenure dossiers or personnel file. Such letters would be sent individually and not presented during the awards program. In recent years our chairs have been using email to send them out and they've been getting less formal. Think about what you would want to have in your dossier. If you'd prefer to have a certificate of service, I'm sure Sheila can make one up with a title of your choice, the position and year of service, the division name, and your name as the chair.*

*Special recognitions from the chair at awards time, such as the chair's appreciation certificate for Roger, are usually to recognize retirement from a committee, completion of a big task, or some other signal service. It would dilute the meaning of it for everyone who held a board position to receive one, as well as prolong the awards presentation program. What would you do, then, for the people who deserve more?*

*But letters or certificates could be distributed via email or during a board meeting.*

*That's my 2 cents.*
*Ann*

Here is one of my cries for help that I sent to several members of our Division and for which I was so grateful for Ann's reply:

*Hello Everyone,*
*I just realized that I have not addressed the "Impossible Award" category, that Anna Ren won last year, and the Special Appreciation Awards.*

*Impossible Award*
*The Impossible Award is awarded by the Division Chair to recognize work that made the impossible, possible.*

*Special Appreciation Awards*
*The Special Appreciation Awards is awarded by the Division Chair for outstanding work for the Division.*

*Are there specifically structured qualifications for these awards and do we have any candidates this year? I hope it is not too late to consider these, if you would like me to include them with the awards for this year. If so, who are the nominees?*

The following is Ann's reply:

*Sheila, et al. –*
*The Division Chair should communicate the special appreciation awards to you. That's not a committee function or nomination process, except in so far as the chair often asks for advice to make sure no one who deserves attention gets overlooked. These are primarily recognition for board and committee service, especially for those who are retiring from Division positions or who completed a project.*

*In recent years, the Impossible Award has been selected by the chair, as well. We don't give it every year. It's really the chair's recognition of extraordinary service above and beyond the call of duty. We often gave it to our solo program planners in the days before we moved to a committee.*
*--Ann*

Ann Koopman won the Science-Technology Achievement Award in 2009. This Award is *the highest award presented by the Science-Technology Division and is reserved for those recipients whose professional work is marked by distinction and dedication to scientific and technical librarianship. The purpose of the award is to recognize those Division members who have made outstanding contributions to the Division and/or to the literature of science and technology librarianship in the past 1 to 5 years.*

The following is the correspondence between me and Ann when I notified her that she had won the 2009 Science-Technology Achievement Award:

*Dear Ann,*
*On behalf of the DST Awards Committee, it gives me great pleasure to inform you that you have been selected as the winner of our 2009 SCI-TECH DIVISION ACHIEVEMENT AWARD!*

*This prestigious award notification will be announced during our Annual Business Meeting and Awards Breakfast on Monday, June 15, 2009, at the SLA Conference in Washington D.C.*

*In addition to all of your wonderful accomplishments which were so well documented in Anna Ren's nomination letter, I would like to also mention and thank you for all of the help and advice that you provided for me during your term as Chair Elect, Chair, and Past Chair of our Division. It is you we have to thank for the establishment of our "Longevity Awards" and for your suggestion of honoring "Science-Technology Division Retirees". In one of your emails to me you stated,*
*"People really love to celebrate things and think fondly of organizations that boost the positive. We should be looking for every opportunity to celebrate and feature our members."*

*Your philosophy really enhances the value of our Awards Committee and it is a philosophy that I believe every Awards Chair should follow.*

*Thank you so very much, and CONGRATULATIONS on winning this very prestigious and extremely well deserved Award!*

*Sincerely,*
*Sheila*

Ann's reply:

*Many thanks, all.*

*You know, even though my job evolved over the years in directions away from sci-tech subjects, I have always kept Sci-Tech as my primary division because I just love our members. We have wonderful people in our division, and it's a pleasure to work*

*with them (and that includes all of YOU). --Ann*

This year our Immediate Past Chair, Helen Josephine, made the following motion to the executive board of our Division to change the name of the "Science-Technology Division Achievement Award" to the "Ann Koopman Science-Technology Division Achievement Award" as shown in her message below:

*Colleagues: I am making a motion to change the name of the "Science-Technology Division Achievement Award" to the "Ann Koopman Science-Technology Division Achievement Award", in honor of Ann Koopman's many years of service to the Science-Technology Division, including Chair of the Division in 2007, Treasurer 2001-2003, Business Manager of STN 2003-2004 and other positions, as well as her generous mentoring of many Sci-Tech librarians. Ann was also active in the Philadelphia Chapter and served as SLA Division Cabinet Chair in 2013 after being elected to a two year term position as the Division Cabinet Representative to the SLA Board in 2012. Do I have a second?*

*As a note, the Sci-Tech Division Achievement award was established in 1974. However, the Sci-Tech Division Achievement Award was first presented to Ellis Mount in 1984. Since then, the award has been presented nine times. Ann was given the award in 2009 (see p 28-29, Vol 63, Issue 3, Article 10 (2009) of STN for a detailed bio of Ann). http://jdc.jefferson.edu/cgi/viewcontent.cgi?article=1033&context=scitechnews*

*Best wishes,*
*Helen*

Ann's passing has touched all of us who have known her with deep feelings of sorrow and emptiness. She gave so much of herself to every position she held within SLA as well as all of her other activities and commitments. I would have loved to have shared my exhilaration at becoming Chair-Elect of the Sci-Tech Division with Ann and to have been able to let her know how much her friendship and support had contributed to building my self-confidence up to the degree required for me to apply for this position. I miss her so very much.

I feel it is very fitting for me to close this article dedicated to Ann Koopman with the following posting from Joe Kraus who in addition to having been the Sci-Tech Division Chair and Program Planner, 2011, was the 2013 winner of the Science-Technology Division Achievement Award:

*Some words about Ann Koopman*
*Posted on 30 January 2014. Tags: Koopman*

*Ann Koopman had been a longtime and active member of both the Philadelphia Chapter and of the Sci-Tech Division of SLA, and I was crushed when I heard the news of her passing in early January. I remember hearing her very inspiring speech when she ran for Division Cabinet Chair-Elect back in 2011. (She won.) Ann had a lot of tenacity, fight, and spirit in her. She was also very caring and gentle, and she always met people with a warm smile.*

*In memory of Ann Koopman, the Sci-Tech Division has renamed the "Sci-Tech Division Achievement Award" after her. From here on out, it will be called the Ann Koopman Sci-Tech Division Achievement Award.*

*I should note that Ann "twisted my arm" to run for Chair-Elect of the Sci-Tech Division back in 2009, and I am glad that she did. I know that this little post does not do her justice–she did an amazing amount of work for SLA and for her community in the Philadelphia area. If you would like to learn more about Ann, I highly recommend that you take a look at this post from the Philadelphia Chapter of SLA, "In Memoriam: Ann Koopman."*

*May she rest in peace,*
*Joe Kraus*

## Science-Technology Division New Members

*Submitted by Ann Ren, Membership Committee Chair, Science-Technology Division*

**The Science-Technology Division welcomes its new members:**

Jocelyn Boice
Fort Collins, CO
USA

Patricia Cromi
North Canton, OH
USA

John Cruickshank
Peachtree City, GA
USA

Josh Gredell
Philadelphia, PA
USA

Julie Huddle
Fort Collins. CO
USA

Etenilza Santos
Reston, VA
USA

Dennis Schroeder
Astoria, NY
USA

Kristen Shuyler
Seattle, WA
USA

Neelam Thapa
Sagar, M.P.
India

Zoe Pettway Unno
Fullerton, CA
USA

William Vanti
East Rutherford, NJ
USA

Beth Wishart
Northland, Wellington
New Zealand

# News from the Chemistry Division

## Chemistry Division — Valerie Tucci, Chair

The Chemistry Division is concerned with chemistry and chemical technology, and the economics, educational advances, and information handling of developments in the field of chemistry and related subjects.

I am looking forward to seeing everyone in Vancouver and expecting some beautiful weather. If you have not signed up for the two Chemistry Division breakfasts on Monday and Tuesday and the Newcomers dinner for Saturday night please do so before the end of the month. Registration for these meals will give SLA Headquarters a more accurate head count for these meals and decrease the chance of the division paying for uneaten meals. Also, to make Saturday night a more leisurely evening and to eliminate the Board meeting running into the Newcomers Dinner, I have only scheduled one Board meeting at the end of the conference. Have a safe journey and come prepared to update your knowledge base and relax in spectacular surroundings.

# (Tina) Na Qin receives 2014 Marion E. Sparks Award for Professional Development

The SLA Chemistry Division (DCHE) is pleased to announce that (Tina) Na Qin is the winner of the 2014 Marion E. Sparks Award for Professional Development

Tina is the Chemistry Librarian at Michigan State University Libraries in East Lansing Michigan. She began this professional position in August 2013 after completing a Master of Library Science degree with a chemical information specialization from Indiana University in July, 2013.

Her undergraduate degree in Chemical Engineering is from Dalian University of Technology in Dalian, P.R. China. She also holds a MS degree in Paper and Chemical Engineering from Miami University, Oxford OH.

In her application essay, Tina wrote about her passion for providing information to people in library setting and outside of libraries. She is particularly interested in cross-cultural information services. In this first-year as a Chemistry Librarian she wants to gain experience and explore opportunities to be an effective liaison with and enhance services to the chemistry faculty. She views the SLA Conference as a way to learn from librarians outside of her institution and to jump-start her career in the library profession. Tina is particularly interested in the ACS Open Access initiatives, mass digitization trends in weeding and preservation, and the use of citation management tools.

The SLA Chemistry Division will present Tina Qin with a $1,500 check and award certificate to support her attendance at the 2014 SLA Annual Conference in Vancouver, B.C. Canada. The presentation will take place during the DCHE Annual Business Meeting & Breakfast on Monday June 9, 2014.

The Sparks Award is named in honor of Marion E. Sparks, a pioneering and influential chemistry librarian who worked at the University of Illinois from 1913 through 1929.

Congratulations Tina, and enjoy the 2014 SLA Conference!

Claire Stokes
Chair of Awards Committee
SLA Chemistry Division

## Chemistry Division New Members

*Submitted by Mindy Peters, Membership, Chemistry Division*

**The Chemistry Division would like to welcome the following new members who have joined since January 2013:**

Emily Gorman
Pittsburgh, PA
USA

Anton Borissov
New York, NY
USA

Maria Garcia
Los Angeles, CA
USA

Deborah Judd-Paternostro
Tarrytown, NY
USA

Alia Al-Harrasi
Abu Dhabi
United Arab Emirates

Lisa Scimemi
Needham, MA
USA

Mary Allen
Livermore, CA
USA

Jim Martin
Tucson, AZ
USA

Theresa Nawalaniec
Parma, OH
USA

Michael Qiu
Los Angeles, CA
USA

Larry Gallina
Westerville, OH
USA

Susmita Chakraborty
Kolkata, West Bengal
India

Jared Hannah
Calgary, AB
Canada

Edward Badger
Dublin, OH
USA

Jorgen Olsen
Los Angeles, CA
USA

Tina Qin
East Lansing, MI
USA

Courtney Guenther
Winston-Salem, NC
USA

Beth Trapp
Taylor, MI
USA

Laura Palumbo
Piscataway, NJ
USA

Sandra Willis
Morris Plains, NJ
USA

Charles Carroll
Fishers, IN
USA

Laura Allen-Ward
Bartlesville, OK
USA

Rebecca Hamburgess
Lexington, KY
USA

Donna Wrublewski
Pasadena, CA
USA

Andrew Klein
Saint Paul, MN
USA

Linda Senkus
Winsted, CT
USA

Mary Frances Lembo
East Grand Rapids, MI
USA

Sandy Parker
Elgin, TX
USA

Julia Lintner
Minneapolis, MN
USA

## Materials Research & Manufacturing Section New Members

*Submitted by Bette Finn, Materials Research & Manufacturing Section*

**The Materials Research & Manufacturing Section of the Chemistry Division Welcomes Its New Member:**

Anton Borissov
Infotrieve, Inc.
124 West 60th Street Apt 47d
New York, NY 10023

# News from the Engineering Division

## Engineering Division Andrew Shimp, Chair

The objectives of the Engineering Division are to provide an association for those having an interest in library and information science as they apply to engineering and the physical sciences and to promote the use of materials and knowledge for the benefit of libraries and other educational organizations.

I devote much of this column to the Engineering Division program at the annual conference in Vancouver. However, I will start with an update of interest about the establishment of a new section within the Division.

**Architecture, Building Engineering, Construction and Design Section**

At the March 12 SLA Board of Directors meeting, a motion to dissolve the ABCD Caucus, originally formed in 2006, was approved. The Division Cabinet Chair subsequently approved the creation of the Architecture, Building Engineering, Construction and Design Section in the Engineering Division.

The scope of the Architecture, Building Engineering, Construction and Design Section is to promote the exchange of knowledge and information among individuals and organizations interested in the development, control, and use of information resources in the built environment with a focus on the specifications, codes, and standards used in the design and construction of buildings and structures.

If you are a member of the Engineering Division, there is no charge to join this new section. To join send an email to membership@sla.org. If you are not a member of the Engineering Division you can add the division membership by completing the form at http://www.sla.org/access-membership/manage-your-membership/.

**Vancouver Conference Program**

I hope you are planning to attend the annual conference in Vancouver. Please note that the Aerospace Section Breakfast, Engineering Division Business Meeting Luncheon and the Electronic Laboratory Notebooks breakfast session are ticketed events. You can purchase tickets even if you have already bought your conference admission. See http://www.sla.org/buy-sla-2014-conference-tickets-today/.

Here are the programs sponsored and co-sponsored by the Engineering Division. Please mark your calendars!

***DENG Board Meeting***
Saturday June 7, 2014, 4:00pm - 5:30pm

DENG Board members and guests will attend and discuss official DENG matters. Division members are welcome to attend.

Moderating: Andy Shimp, Chair, SLA Engineering Division

***Early Bird Dinner***
Saturday June 7, TBD

Dutch treat dinner will be held after the Board Meeting. All Engineering Division Members are welcome to attend. Please contact andy.shimp@yale.edu if you plan to join us or would like additional information.

***Standards Update***
Sunday, June 8, 1:30pm – 3:00pm

The Standards Update is your opportunity to meet representatives and vendors from many standards development organizations. Learn about new developments and the latest product and technological innovations.

Moderating: Susan Morley, Manager, Information & Knowledge Management, CSA Group

Speaking: Claudia Bach, President, Document Center; Stuart Bowyer, Vice President, Business Development - Americas, Infor-

mation Services Division, SAI Global; Patti Ensor, Manager, Commercial Alliances, CSA Group; Erin Moore, Product Manager, Technical Papers, SAE International; William Nara, Director, Publications Marketing, ASCE; Steve Noth, Senior Director, Product Management, IHS; John Pace, Vice-President, Publication & Marketing, ASTM (ASTM International); Michael J. Rovins, Director (Global) Sales and Customer Service at ASME, ASME (American Society of Mechanical Engineers); Alban Smith, Head of Licensing & Partnership Development, BSI Standards Limited; Angela Trilli, Senior Marketing Manager, Digital Products and Corporate Sector, IEEE; David Walsh, President, Standards Technology Group, Inc.

Sponsored by American Society of Civil Engineers (ASCE), ASTM International, Access Copyright, ICE Publications, IEEE, and TechStreet

Presented with Petroleum & Energy Resources Division, Science-Technology Division, Transportation Division

***Crossing Boundaries: Corporate and Academic Librarians***
Sunday, June 8, 3:30pm-5:00pm

Join us for a lively and engaging discussion on the similarities and differences between academic and corporate libraries and their parent organizations. A panel of librarians who have experienced both cultures will share practical tips for working in and working with both areas to help us "cross boundaries".

Speaking: Chris Ewing, EWU- JFK Library; Jim Van Loon, Liaison for Engineering, Physics & Astronomy, Wayne State University; Tasha Maddison, Science Liaison Librarian, University of Saskatchewan; Valerie Tucci, Physical Science and Engineering Librarian, College of New Jersey Library; Christie Wiley, University of Illinois

Sponsored by AIAA, Association for Computing Machinery, IEEE, SAGE Publications Inc., Taylor & Francis Group

***Science and Engineering 101***
Sunday June 8, 3:30pm-5:00pm

Join Mary Frances Lembo and James Manasco as they celebrate their 10th anniversary with a retrospective survey of past sessions including their favorite sources, with updates, and their favorite memories, including the infamous patent session.

Presented with Science-Technology Division (Lead Division)

Sponsored by IEEE, SPIE Digital Library, Taylor & Francis Group, Association for Computing Machinery

***Aerospace Section Breakfast and Program***
Monday June 9, 8:00am - 9:30am

Join the Aerospace Section for a delicious meal and stimulating discussion on current topics.

Ticket Prices: member US $20.00, student member US $10.00, non-member US $25.00

Moderating: Edna Paulson, Chair, Aerospace Section

Sponsored by AIAA, SAGE Publications Inc.

***Engaging Users with Technology***
Monday, June 9, 10:00am - 11:30am

How do we decide what products we will purchase and invest our time in? Are these decisions driven by the functionality of the technology, or how the interaction enhances our experience? The speakers will explore models to measure user engagement along with teaching and learning applications, such as gaming.

Moderating: Andy Shimp, Chair, SLA Engineering Division

Speaking: Damara Jacobs, Primary Consultant & CEO, J3 Consulting Group; Heather O'Brien, Assistant Professor, UBC-iSchool; Donna Wrublewski, Librarian, California In-

stitute of Technology

Sponsored By SAE International
Presented with the User Experience Caucus

***Engineering Division Business Meeting and Luncheon***
Monday, June 9, 12:00pm – 1:30pm

Join the Engineering Division for networking and information as we present awards, discuss the past year and future goals, and eat!

Ticket Prices: member US $25.00, student member US $10.00, non-member US $30.00

Moderating: Andy Shimp, Chair, SLA Engineering Division

Sponsored By ASME, Association for Computing Machinery, Basch Subscriptions, Elsevier, ICE Publishing, Morgan & Claypool Publishers, TechStreet

***All Sciences Poster Session***
Monday June 9, 5:30pm-7:00pm

Posters contributed by members of the science-oriented divisions of SLA are presented by their authors. Come learn from the best and enjoy hors d'oeuvres to match.

Presented with Biomedical & Life Sciences Division, Chemistry Division, Food Agriculture & Nutrition Division, Pharmaceutical & Health Technology Division, Physics-Astronomy-Mathematics Division, Science-Technology Division

Sponsored by ACSESS - Alliance of Crop Soil & Environmental Science Societies

***DCHE/DENG Breakfast and Corporate/ Academic Roundtable on Electronic Laboratory Notebooks (ELN)***
Tuesday June 10, 7:30am - 9:30am

Electronic Laboratory Notebooks or ELNs are more than a simple alternative to the traditional paper laboratory notebook. Current technologies make ELN critical for R&D collaboration, knowledge management and productivity. Although well-established particularly in the pharmaceutical world, ELNs, by providing a variety of research solutions, are quickly moving into the mainstream for all industry and many disciplines in academia. Some of the questions to be addressed include the following. What are ELNs? With the many choices, how do we decide what ELN is right for our organization? What is the librarian's role in the transition to and implementation of the ELN?

Ticket Prices: member US $15.00, student member US $15.00, non-member US $15.00
Moderating: Theodosia Jones-Quartey, Director, Global Library & Information Services, W.R. Grace

Speaking: Denise Callihan, PPG Industries; Simon Coles, CEO, Amphora Research Systems; Michael Elliott, Atrium Research; Daureen Nesdill, Data Curation Librarian, University of Utah

Presented with Chemistry Division (lead division)

***Architecture, Building Engineering, Construction and Design Section Launch and Roundtable***
Tuesday, June 10, 9:45am - 10:45am

The ABCD Caucus is now a section of the Engineering Division. Come join us for the new section launch and future planning.

***Engineering Café***
Tuesday, June 10, 2:00pm - 3:30pm

Join us for this roundtable discussion of current topics of interest to engineering and science librarians. Topics will be chosen based on survey results/discussion on the DENG listserv. There will be 3 rounds of 25 minutes each to allow attendees to gain multiple experiences yet have time to effectively discuss each topic.

Sponsored by McGraw-Hill Professional
Presented with Transportation Division

# News from the Aerospace Section

## Aerospace Section — Edna Paulson, Chair

The Aerospace Section of the Engineering Division encourages communication and cooperation among information professionals concerned with aerospace, aeronautical and related technologies. In addition, it fosters dialog with entities such as NASA, the AIAA and other important sources of technical data and bibliographical services.

As I write in mid-April I'm finally seeing signs of spring here in Maryland. The cherry blossoms are a bit behind, but daffodils and forsythia are out, and the air is mostly mild. It's a great relief after the harsh winter a lot of us have experienced. We're moving quickly toward the 2014 SLA Annual Conference in Vancouver, where I hope to see many of you. The Engineering Division planners have set up a great program, with great support from our sponsors. Check it out in the Online Planner at http://www.sla.org/2014-online-planner/, where you can also save your selected sessions and sync them with your phone. The planner will also be the place to check room locations as they're assigned later.

The Aerospace Section's breakfast business meeting will be on Monday morning, June 9, 8:00 a.m. to 9:30 a.m. The day is a change from previous years, since as a section we need to meet before the division's meeting at lunchtime that same day, so be sure to note it in your planner. You'll have a chance to meet the new 2014 Chair-Elect, Mary S. Whittaker of Boeing, who will serve as Section Chair in 2015. After a tasty breakfast sponsored by AIAA and Sage Publications, we'll have a short business meeting, then a discussion of possible directions for the section. We'll also be presenting the George Mandel Memorial Award.

As you explore the exhibits, please take time to thank our breakfast sponsors, AIAA and Sage, as well as sponsors of other Engineering Division programs and the conference at large. They do appreciate hearing from us!

## *Beyond the Chemistry Web*

Bob Buchanan, Chemistry Librarian, Auburn University

Interpretation of Fair Use has changed significantly in the past couple of years. The old rules of specific number of pages, periods of use, and the number of times used have been challenged by recent court decisions that give greater freedom for reuse, especially in creative works. If you have not read the Fair Use recommendations by the Association of Research Libraries (ARL), then you should spend an hour or two reading over and thinking about how best to apply them in your library. The **ARL Code of Best Practices** webpage provides links to resources created by the ARL and others. Definitely take a look at the *Code of Best Practices in Fair Use for Academic and Research Libraries, the FAQ for Librarians,* and the promotional material *Good News About Library Fair Use*.
http://www.arl.org/focus-areas/copyright-ip/fair-use/code-of-best-practices

Sponsored by the NSF, **Science360 Video Library: Chemistry** currently has over 120 chemistry videos on a wide range of topics including the chemistry of cheeseburgers, how oil dispersants work, and why ammonia is good for cleaning. Several of the videos showcase scientists who share their research and perspectives. Each video is typically five minutes long and is aimed at the general public. The videos are easy to embed into websites and blogs. Science360 Video Library offers similar video collections for astronomy, geology, mathematics, medicine, physics and technology.
http://science360.gov/topic/Chemistry/

Published by the FDA, the *Approved Drug Products with Therapeutic Equivalence Evaluations* is more commonly known as the **FDA Orange Book**. Use it to find the latest information on approved generic drug products such as their therapeutic equivalence and patents that may apply to the generic form.
http://www.fda.gov/cder/ob/

Do online games improve brain function? The hype is likely greater than the reality, but research does suggest that online games improve a number of cognitive abilities. **Games for the Brain** challenges your memory, logic, and strategy with twenty seven visual games and twelve word games. Many classic games are included such as Sudoku, checkers, Chinese checkers, minesweeper, and anagrams. Although this is a commercial site, advertising is fairly unobtrusive and there are no pop-ups.
http://www.gamesforthebrain.com/

I usually don't include websites that are totally unrelated to librarianship or science, but **Baby Name Wizard** is a fun and interesting site (although I am not entirely confident of their data). You will probably start off searching your name, a friend's name, and then just a few more before you realize it is time to get back to work. The most interesting part of **Baby Name Wizard** is a graph that shows the name's usage pattern since the 1880s. You will need to mentally recalibrate for the absolute scale, but the patterns are fascinating and often tell a story. For example, Jennifer became popular in the 1970s (Love Story) and Sarah in the 1980s (Terminator). The site includes a derivation of the name, nicknames, common names of siblings, comments from readers, international rankings, and famous people with that name.
http://www.babynamewizard.com

# Sci-Tech Book News Reviews Susan Fingerman, Selector

The following section consists of book reviews selected from *Reference and Research Book News*, reprinted with the permission of Book News Inc. This review journal is published six times a year, each issue reviewing thousands of new titles in all disciplines. For a sample issue and subscription information, contact Book News Inc at booknews@booknews.com or (503)281-9230.

## SCIENCE (GENERAL)

Q180 9781452259499
**Conducting research literature reviews; from the Internet to paper, 4th ed.**
Fink, Arlene.
Sage, ©2014 257 p. $59.00 (pa)
Fink (medicine and public health, U. of California at Los Angeles) helps students, researchers, marketers, planners, and policy makers identify, interpret, and analyze published and unpublished research literature in the social, behavioral, business, and health sciences. She explains how to identify online bibliographic and article databases; determine how to search for literature; use Boolean operators; identify and deal with unpublished studies; organize the literature using bibliographic software; set inclusion and exclusion criteria; justify a method for identifying and reviewing only the highest quality literature; prepare a structured abstraction form; create evidence tables; ensure and measure the reliability and validity of the review; synthesize and report results; conduct and evaluate descriptive literature reviews; and understand and evaluate meta-analytic research. This edition has been updated to address the online nature of most literature searches, with many online examples and references. It also has a revised and updated list of online databases; case studies in their use; more exercises on online searching; clarification of basic research concepts for making judgments about the quality of research methods; explanation of the major available formal systems for evaluating transparency and quality; more qualitative examples and guidelines and checklists for evaluating their quality; discussion and examples of mixed-methods research; and more examples of writing up reviews.

Q180 9781452216850
**Proposals that work; a guide for planning dissertations and grant proposals, 6th ed.**
Locke, Lawrence F. and Waneen Wyrick Spirduso, Stephen J. Silverman.
Sage, ©2014 383 p. $62.00 (pa)
Before you have to slave over that dissertation or grant, you have to slave over the proposal. It makes sense to take an organized, efficient approach from the start, and this sixth edition includes advice on the standard proposal, including writing samples, and new forms of proposals including ones that you prepare and submit on the Internet, including helpful URLs. The authors discuss the function of the proposal, writing the proposal (including doing the right thing), content, important considerations and different assumptions, mixed method research styles and forms, the oral presentation, and getting money for research. They include specimens of proposals, including an experimental study, a qualitative study, an online survey study, and a funded grant.

Q180 9780415828697
**Towards methodologically inclusive research syntheses; expanding possibilities.**
Suri, Harsh. (Routledge research in education; 25)
Routledge, ©2014 191 p. $140.00
Adapting and building upon the diverse literature on research synthesis methods and primary research methods, Suri (higher education, U. of Melbourne, Australia) presents a framework for methodologically inclusive research synthesis that includes the incorporation of qualitative research methods from postpositivist, interpretive, participatory, critical, and postmodern traditions into the process of a research synthesis. The framework is predicated on the guiding principles of informed subjectivity and reflexivity, purposefully informed selective inclusivity, and audience-appropriate transparency and is built around the six phases of identifying an appropriate epistemological orientation; identifying and appropriate purpose; searching for relevant literature; evaluating, interpreting, and distilling evidence from selected studies; constructing connected understandings; and communicating with an audience.

Q335 9781118294246
**The autonomous system; a foundational synthesis of the sciences of the mind.**
Gyurky, Szabolcs Michael de and Mark A. Tarbell.
Wiley, ©2014 172 p. $149.95
A novel approach to the problem of artificial intelligence, this intriguing book turns the process on its head. Rather than trying to construct an intelligent system that mimics human mind, the authors propose a reverse approach: they analyze human mind in terms of its component systems, taking fundamental philosophical concepts of mind and consciousness as points of departure. They look at the mind as an architecture, what they call "an autonomous system," establish the development methodology and analyze the problem as a software development project, as it were, informed both by computer science, information theory and, most importantly in this case, philosophy. They postulate several interacting systems that together constitute human mind: will, reason, intellect, presentation, understanding, sensory, decision and thought and then discuss the underlying architecture of these systems and the ways they interrelate and communicate with each other, giving rise to consciousness. Ethical problems of such a project are not forgotten. The authors have an impressive background in aerospace, biomedical and computer science research and certainly provide much food for thought in this intriguing book.

## MATH, COMPUTERS

QA76 9781439879092
**Managing Risk and Security in Outsourcing IT Services: Onshore, Offshore and the Cloud**
Frank Siepmann
CRC Press, ©2014 226 p. $69.95
Intended for IT managers, this handbook offers advice on maintaining security and privacy when outsourcing computer network administration, data management services, and business processes to a company operating overseas. A country survey summarizes the IT industry, government policy, economy, infrastructure, and climate of India, Indonesia, Estonia, Singapore, China, Bulgaria, Philippines, Thailand, Lithuania, and Malaysia. Protocol suggestions mapped to ISO 27002 point out questions to consider regarding exchange of information security, network access control, malicious code, business continuity management, employee training, incident response, and legal requirements.

QA76.585 9781466648012
**Enabling the new era of cloud computing; data security, transfer, and management.**
Shen, Yushi and Yale Li, Ling Wu, Shaofeng Liu, Qian Wen. (Advances in systems analysis, software engineering, and high performance computing book series)
Information Science Reference, ©2014 312 p. $195.00
Computer and information scientists and business specialists examine cloud computing from such perspectives as its main components, trusted cloud initiative reference architecture, security information and event management implementation guidance, data protection in the cloud era, monitoring enterprise security with the fusion center model, big data, utilizing the content delivery network, parallel data transfer protocol, and the impact of cultural differences on the cloud computing ecosystems in the US and China.

QA76.59 9781466644465
**Research and design innovations for mobile user experience.**
Title main entry. Ed. by Kerem Rizvanoglu and Gorkem Cetin. (Advances in wireless technologies and telecommunication)
Information Science Reference, ©2014 357 p. $190.00
For those in academia and the professional sector, Rizvanoglu (communication, Galatasaray U., Istanbul) and Cetin, an information technology product manager in Turkey, compile 16 chapters by computer science, media, communication, and other researchers from the US, Europe, South Africa, India, and Egypt, who describe aspects of mobile user experience design and research. They discuss a vehicle dashboard design and visualization to change driver behavior, a mobile travel application to change behavior, a framework to enhance the mobile user experience of goal-oriented interactions, the issue of context-dependency in research on mobile human computer interactions, cross-cultural mobile usability, the mobile user experience in emerging markets, mobile banking, personalized health using mobile diaries, mobile accessibility for blind users of touchscreen devices, touchless data entry using magnetic fields, privacy issues in mobile environments, augmented reality applications, context-aware systems for data mining, information retrieval, and the use of mobile media on college campuses.

QA76.76 9781439876626
**Effective methods for software and systems integration.**

Summers, Boyd L.
CRC Press, ©2012 163 p. $99.95
Summers, a software engineer for an aerospace company, explains how to select and apply a software development life cycle that promotes effective and efficient software and systems integration in military and aerospace programs and software industries. He explains program and project planning; systems design; software requirements, design, implementation, and integration; software and systems integration and delivery; subcontractor roles and responsibilities; and product evaluation.

QA76.9 9781466578371
**Big Data Computing**
Edited by Rajendra Akerkar
CRC Press, ©2014 542 p. $99.95
Editor Akerkar offers this introductory volume on aggregation, analysis, and use of extremely large data sets, with an emphasis on scalability of solutions. The first section defines Big Data and the processing problems under consideration, including an evolutionary/ecosystem perspective on information and its change over time. The middle sections discuss particular modes of processing for different goals. Machine processed semantics, programming to manage a large influx rate of data, and analytic strategies for business are covered. The final section discusses a variety of Big Data applications, including social data analysis, "smart" buildings, monitoring of electricity flow, geographic modeling, and language processing. Although no background in large-scale data analysis or NoSQL is required, the reader should be comfortable with mathematics and programming concepts.

QA76.9 9781466560956
**Core Software Security: Security at the Source**
James Ransome and Anmol Misra
CRC Press, ©2014 388 p. $79.95
An important book in the universe of security holes and constantly developing intrusion techniques, this highly usable text by software security professionals presents a paradigm the Secure Development Lifecycle (SDL), that frames the discussion of the specific methods used "at the source" to build security into applications as they are being developed, in an attempt to minimize embarrassing patches and fixes after the product has been rolled out. Organized as a collection of specific activities and best practices, the text covers the entire life-cycle of software development: assessment, architecture, several stages of design and development, shipping and post-release support with specific security development tips and techniques described throughout. The last two chapters describe, in turn, real-world applications including APIs, static analysis and risk assessment methodologies, and a synthesis of information presented in the text together with the discussion of legal issues and an overlook of barely emergent problems that have the potential to affect this methodology and security issues in general in the future.

QA76.9 9781587143243
**Data Center Virtualization Fundamentals**
Gustavo Alessandro Andrade Santana
Cisco Press, ©2014 929 p. $64.99 (pa)
The author, a Cisco Technical Solutions Architect with 15 years of experience provides a thorough and comprehensive overview of data virtualization technologies from scratch to its probably future developments and to do so in a general enough manner to be of use to people across the spectrum of system and data administrators. The first several chapters define terminology and give an overview of the history of data virtualization, before diving into the nitty-gritty of technical detail, covering all angles, all likely problems, presenting plenty of examples and illustrations to provide a thorough description of this important and rapidly-growing technology. Tables and charts abound, and information, even though being slightly Cisco-oriented, is of use to anyone interested in the subject. Although daunting in size and information density, the presentation is gentle enough for self-study, and certainly essential for someone seeking certification in the subject.

QA76.9 9781466646230
**Emerging research and trends in interactivity and the human-computer interface.**
Title main entry. Ed. by Katherine Blashki and Pedro Isaias. (Advances in human and social aspects of technology)
Information Science Reference, ©2014 554 p. $175.00
Issues within the culture and design of interaction between humans and computers are addressed by researchers coming from both the computer side and the human side. The areas covered are users' needs and expectations, design approaches, technological approaches, methodological approaches, supporting learning, reflection, and the future. The topics include enhancing the acquisition of social skills through the interacivity of multimedia, a user study on a visual editor to compose rules in active documents, a case study in Malaysia of a location-based visualization tool for tuberculosis and dengue, hand gesture rec-

ognition as a means for mobile human computer interaction in adverse working environments, and the impact of visual complexity on children's learning websites in relation to aesthetic preference and learning motivation.

QA76.9 9781439841594
**Enterprise architecture and information assurance; developing a secure foundation.**
Scholz, James A.
CRC Press, ©2014 240 p. $79.95
Scholz, a security professional, shows companies how to design secure enterprise architectures and evaluate their network and business model, and learn how they fit together. He addresses how to perform a business impact analysis and risk assessment; implement the correct level of controls for the different processes of the Information Technology Infrastructure Library, Microsoft Operations Framework, and business service management; and understand the 17 families of management, how they are applied and at what level, and what management, operational, and technical control are and how each are implemented within the infrastructure. He explains security model components, systems security categorization, risk management and mitigation, security configuration management, contingency planning, cloud computing, continuous monitoring, physical and building security, and the certification and accreditation process.

QA76.9 9781466643093
**Innovative approaches of data visualization and visual analytics.**
Title main entry. Ed. by Mao Lin Huang and Weidong Huang. (Advances in data mining and database management)
Information Science Reference, ©2014 448 p. $200.00
The 18 papers selected for this collection present new research on visualization techniques for analyzing large amounts of complex data in different fields and potential applications in psychology, anomaly detection, and online community management. The contributors propose a visual data mining framework for correlation and classification, a three-later model of highlighting, a conversational interface for generating visualizations, an object graph visualizer for debuggers, and a framework for developing diagrams. Other topics include visualization of business contracts and human behavior data, human activity-centered geospatial visualizations, feature-based uncertainty visualization, and virtual reality technologies for large dataset analysis.

QA76.9 9781466564121
**Intrusion Detection Networks: A Key to Collaborative Security**
Carol Fung and Raouf Boutaba
CRC Press, ©2014 239 p. $119.95
As cyber-intrusion methods grow in complexity, sophistication and subtlety, intrusion detection methods have to keep pace with the threats. In this study and manual, two computer scientists elaborate on the concept of collaborative intrusion detection methodology: networks that can be joined by many different clients and that provide several layers of intrusion detection software with high redundancy and multi-level verification. The ways to exploit the benefits of a multi-partner collaboration are emphasized. After an introductory overview of intrusion methods and types, and of detection techniques including details of several existing detection networks, the text moves into a detailed discussion of design principles for building a successful collaborative network. Trust and resource management, distributed decision-making process, selection and management of collaborating partners themselves all can increase the robustness of the network, and specific policies that utilize these approaches are discussed together with case studies and illustrations of distributed design. The treatment is mathematically rigorous and several mathematical proofs are presented in the appendix.

QA76.9 9781466644625
**Packaging digital information for enhanced learning and analysis; data visualization, spatialization, and multidimensionality.**
Title main entry. Ed. by Shalin Hai-Jew. (Advances in educational technologies and instructional design)
Information Science Reference, ©2014 408 p. $175.00
Researchers in education, information, computer science, and other fields explore mapping data to geographical spaces for purposes of teaching and learning. They cover principled strategies, innovative technologies and techniques, packaging digital contents for perspective and analysis, real-world cases of packaging for learning, and digital packaging for young learners. Among the topics are a partial typology of branching logic in the design of online learning, weaving Web 2.0 and facial expression recognition into the three-dimensional virtual English classroom, visualizing high-level associations from Twitter data, using social network analysis to examine social hierarchies and team dynamics on instructional design projects, structuring an emergent and trans-

disciplinary online curriculum, and evaluating a technique for improving letter memory in at-risk kindergarten students.

QA166 9781439880180
**Handbook of Graph Theory, 2nd Edition**
Edited by Jonathan L. Gross, Jay Yellen, and Ping Zhang (Discrete Mathematics and Its Applications)
CRC Press, ©2014 1610 p. $139.95
Editors Gross, Yellen, and Zhang offer this broad-based review of graph theory presented in thirteen in-depth chapters, each with a glossary. The fundamentals and history of graph theory are presented in the first chapter. The book then discusses graph representation and construction, directed graphs, connectivity and traversability. An exposition of graph coloring is followed by the relevance of graph theory to particular mathematical subfields: algebraic graph theory, topological graph theory, and analytic graph theory. Explanation of graphical measurement leads to the last set of chapters discussing the use of graphs in computer science, networks and flows, communication networks, and the natural sciences. Topics are presented tersely in CRC Handbook style to maximize information density, and the second edition includes approximately 30% more material by both pagecount and number of contributors.

QA188 9789814546775
**Matrix Spaces and Schur Multipliers: Matriceal Harmonic Analysis**
Lars-Erik Persson and Nicolae Popa
World Scientific, ©2014 192 p. $64.00
Persson and Popa present this formal mathematics volume discussing matriceal harmonic analysis, a technique whereby Fourier coefficients are translated into infinite matrix diagonals. After introductory concepts, integral operators in infinite matrix theory are characterized based on the work of Victor Lie, with example applications in Toeplitz and Hankel matrices. Matrix versions of various spaces are presented in the remaining chapters, starting with periodic function spaces and beginning from Fejer's theory, and then addressing Hardy spaces, BMOA, Bergman spaces, and Bloch spaces. Finally Schur multipliers on analytic matrix spaces are discussed.

QA188 9781470409616
**Random Matrices and the Six-Vertex Model**
Pavel Bleher and Karl Liechty (CRM Monograph Series / Centre de Recherches Mathématiques; Volume 32)
American Mathematical Society, ©2014 224 p. $98.00
Outlining a connection from random matrices to the six-vertex model of statistical physics, Bleher and Liechty focus on the Riemann-Hilbert method for both continuous and discrete orthogonal polynomials, and applications of this approach to matrix models as well as to the six-vertex model. They cover unitary matrix ensembles, the Riemann-Hilbert problem for orthogonal polynomials, discrete orthogonal polynomials on an infinite lattice, introducing the six-vertex model, the Izergin-Korepin formula, the disordered phase, the anti-ferroelectric phase, the ferroelectric phase, and between the phases.

QA273 9780470647271
**Handbook of probability.**
Florescu, Ionut and Ciprian A. Tudor. (Wiley handbooks in applied statistics)
Wiley, ©2014 449 p. $149.95
Florescu and Tudor set out to produce a reference that is easily accessible without needing too much background knowledge, but containing the fundamental notions of probability theory. The readers they have in mind are post-graduate students beginning thesis research in an area that requires probability, and professionals working in a field that encounters stochastic processes. Among the topics are probability space, random variables, generating random variables, characteristic function, Gaussian random vectors, and limit theorems.

QA278 9781466558212
**Data clustering; algorithms and applications.**
Title main entry. Ed. by Charu C. Aggarwal and Chandan K. Reddy. (Chapman & Hall/CRC data mining and knowledge discovery series)
CRC Press, ©2014 622 p. $99.95
Contributors from fields where data clustering is applied explore three aspects of the phenomenon: core methods for data clustering, different problem domains and scenarios, and detailed insights from the clustering process. The topics include a survey of partitional and hierarchical clustering algorithms, non-negative matrix factorizations for clustering, clustering categorical data, time-series data clustering, network clustering, uncertain data clustering algorithms, semi-supervised clustering, and educational and software resources for data clustering.

QA278 9789814531740
**Statistical Tests of Nonparametric Hypotheses: Asymptotic Theory**
Odile Pons

World Scientific, ©2014 293 p. $98.00
Pons explores tests of hypotheses in regular nonparametric models, including tests based on empirical processes and smooth estimators of density functions, regression functions, and regular functions defining the distribution of point processes and Gaussian diffusion processes. He details the asymptotic behavior of the statistics and the asymptotic properties of the tests. The topics are asymptotic theory, nonparametric tests for one sample, two-sample tests, multi-dimensional tests, nonparametric tests for processes, nonparametric tests under censoring or truncation, and sequential tests.

QA315 9781466571396
**Introduction to the calculus of variations and control with modern applications.**
Burns, John A. (Chapman & Hall/CRC applied mathematics and nonlinear science)
CRC Press, ©2014 544 p. $99.95
Burns (mathematics, Virginia Polytechnic Institute and State U.) examines modern variations of calculus, giving it rigorous modern theoretical and numerical approaches. He includes the calculus of variations and optimal control, historical notes on the calculus of variations, preliminaries on the simplest problems, necessary conditions for local minima, sufficient conditions for the simplest problems, extensions and generalizations, applications, optimal control problems, simplest problems in optimal control, extension of the maximum principal, and linear control systems. The result is simple, clean and just challenging enough.

QA323 9781466595217
**Classification of Lipschitz Mapping**
Lukasz Piasecki (Pure and Applied Mathematics )
CRC Press, ©2014 224 p. $99.95
Focusing on the mean Lipschitz condition, Piasecki deals with a problem of more precise classification of lipschitzian mappings, believing that a condition that describes such classes should satisfy several principles. The topics include the Lipschitz condition, basic facts on Banach spaces, the Lipschitz constants for iterates of mean lipschitzian mappings, subclasses determined by p-averages, mean contractions, non-expansive mappings in Banach spaces, mean non-expansive mappings, and mean lipschitzian mappings with k larger than one.

QA378 9783110321432
**Additive operator-difference schemes; splitting schemes.**
Vabishchevich, Petr N.
De Gruyter, ©2014 354 p. $210.00
Vabishchevich (nuclear safety, Russian Academy of Sciences) explores mathematical modeling problems in the finite-dimensional real Hilbert or Banach spaces as problems with the initial conditions for operator-differential equations. His topics include the stability of operator-difference schemes, additive schemes of two-component splitting, schemes of summarized approximation, schemes based on the approximation of a transition operator, the splitting of the operator at the time derivative, and equations with pair-wise adjoint operators.

QA402 9781439868201
**Generalized convexity, nonsmooth variational inequalities, and nonsmooth optimization.**
Ansari, Q.H. and C.S. Lalitha, M. Mehta.
CRC Press, ©2014 280 p. $99.95
Indian mathematicians Ansari (Aligarh Muslim U.), Lalitha (U. of Delhi-South Campus) and Mehta (U. of Delhi-Satyawati College) combine the three concepts into a single volume, and include variational inequalities defined by a bifunction --a topic that is new. They write primarily for graduate students and researchers, but say there is enough elementary matter to support an undergraduate course. They begin by dealing with generalized convexity and generalized monotonicity, then turn to variational inequalities and optimization problems in both smooth and non-smooth settings.

QA612 9789814551243
**Advances in the Homotopy Analysis Method**
Edited by Shijun Liao
World Scientific, ©2014 417 p. $125.00
Liao edits this research volume on applications of the homotopy analysis method (HAM) in nonlinear problems, particularly where other common approaches such as perturbation methods may not be appropriate. The first chapter reviews the method, its mathematical basis, and describes its advantages. The book then goes into predictor HAM and spectral HAM, characterizes the stability of the method given variation of the linear operator and convergence-control parameters, and carefully assesses the convergence conditions of the method. Applications to boundary layer flows of nanofluids and the fractional Swift-Hohenberg equation follow. The final two contributions present packages for Maple and Mathematica utilizing HAM for periodic oscillations and nonlinear boundary value problems, respectively.

## ASTRONOMY

QB820 9783527410743
**Collisionless plasmas in astrophysics.**
Belmont, Gérard and Roland Grappin, Fabrice Mottez, Filippo Pantellini, Guy Pelletier.
Wiley-VCH, ©2014 413 p. $145.00
Astrophysicists Belmont Grappin, Mottez, Pantellini, and Pelletier present a basic textbook of plasma physics, and so encompass most classical topics of the discipline, such as turbulence, magnetic reconnection, linear waves, instability, and nonlinear effects. Their focus is on the collisionless limit and the consequences of the different modelings, fluid or kinetic in this case. Most of the examples are from the space physics of planetary magnetopsheres and solar wind. They cover plasma description and plasma models; the magnetized plasmas; collisional-collisionless; waves in plasmas; nonlinear effects, shocks, and turbulence; flow and particle acceleration processes; the transport and acceleration of cosmic rays; and the kinetic-fluid duality.

## CHEMISTRY

QD39 9783110300079
**Mathematical Chemistry and Chemoinformatics: Structure Generation, Elucidation and Quantitative Structure-Property Relationships**
Adalbert Kerber, Reinhard Laue, Markus Meringer, Christopher Rücker, and Emma Schymanski
De Gruyter, ©2014 491 p. $182.00
Reporting on research at the University of Bayreuth into constructive combinatorics based on the use of finite groups actions, the book describes, extends, and applies methods of computer chemistry and chemoinformatics that can be used in generating molecular structure, elucidating structure, combinatorial chemistry, quantitative structure-property relations (QSPR), generating chemical patent libraries, and other applications. Among the topics are the basics of graphs and molecular graphs, advanced properties of molecular graphs, chirality, stereoisomers, supervised statistical learning, and case studies of computer-aided structure elucidation (CASE).

QD281 9783527333875
**Synthetic methods for biologically active molecules; exploring the potential of bioreductions.**
Title main entry. Ed. by Elisabetta Brenna.
Wiley-VCH, ©2014 387 p. $190.00
Organic chemists review the current state of using enzyme catalysts in the development of synthetic procedures, especially for preparing high-value products in the life sciences, such as biologically active molecules and active pharmaceutical ingredients. Focusing on the currently available toolbox of biocatalyzed reductions of C=O, C=C, and formal C=N double bonds, they identify both reliable biocatalyzed transformations that can currently be used by organic chemists involved in developing manufacturing processes, and biotransformations that still require some improvement and investigations before they are reliable. Bioreductions are the main topic because of their widespread application in organic synthesis and their versatility in creating stereogenic centers in chiral molecules.

QD305 9781118615324
**Alkynes in Cycloadditions**
Maretina I. Alexandrovna and Boris I. Ionin. Translated by Maretina I. Alexandrovna and Boris I. Ionin
Wiley, ©2014 294 p. $190.00
This volume outlines a methodology of regioselective synthesis of aromatic and nonaromatic carbocyclic and heterocyclic ring systems based mainly on [2+2+2] and [4+2] cycloaddition, and other reactions of acetylenic units, including enediynes and enyne-allenes. It details new strategies for the formation of aromatic and polynuclear hydrocarbons, reflecting a modern approach to organic synthesis based on (Z)-hex-3-en-1,5-diyne and (Z)-hepta-1,2,4-trine-6-yne blocks. It also covers one-step synthesis of benzene derivatives, beta-substituted naphthalenes, and acenes by the cylcoaromatization of enediynes and enyne-allenes, and includes the mechanisms of cylcoaromatization resulting in the formation of fulvene and indene systems. Also discussed are the reactions of cascade cyclizations, heterocyclization involving enyne-carbodiimides, and new achievements in some classical cycloaddition reactions, such as the Diels-Alder condensation with acetylenic dienophiles, [2+2] cycloadditions with an acetylene component leading to the creation of a cyclobutene ring, and new results in cyclobutene syntheses by [2+2] acyclization of phosphorus containing 1,3-butadiene derivatives synthesized starting with propargyl-type alcohols.

QD321 9781605950389
**Functionalizing Carbohydrates for Food Applications: Texturizing and Bioactive/Flavor Delivery Systems**
Edited by Milda E. Embuscado

DEStech Publications, Inc., ©2014 477 p. $172.50
Embuscado offers this volume on carbohydrate manipulation for functional food purposes. The first chapter reviews basic carbohydrate chemistry including carbonyl, carboxyl, and hydroxyl modifications, glycosidic linkages, and polymerization. Mechanical properties of starches and gums are related to their chemical properties, allowing discussion of textural use. Use of carbohydrates as a delivery system for flavoring or bioactive compounds, chiefly through selective emulsion or polymerization, is covered. The last two chapters address process methods for achieving optimal delivery and analytic methods for verifying quality and stability of intermediates or final products. The book is constructed so as to let each chapter stand alone, resulting in some overlap. It is intended as a reference and background reading for both beginning and experienced food scientists and manufacturers.

QD461 9783527334612
**De novo Molecular Design**
Edited by Gisbert Schneider
Wiley-VCH, ©2014 551 p. $205.00
Editor Schneider presents this bioorganic synthesis volume focusing on de novo computer-assisted design. The first several chapters cover the history of de novo drug design and assessment of potential compounds by comparison to known receptors and ligands. Methods for generating and screening useful libraries of synthetic targets are then discussed, including fragment-based methods, computational algorithms, combinatorial space, and pseudoreceptor modeling. Synthetic accessibility, multitarget activity, and free energy calculations are addressed. The last several chapters discuss bioisosterics and theoretically guided design of peptides, nucleic acid structures, and RNA aptamers.

QD471 9781119953203
**Local Structural Characterisation**
Edited by Duncan W. Bruce, Dermot O'Hare, and Richard I. Walton (Inorganic Materials )
Wiley, ©2014 364 p. $125.00
Chemists explain recently developed techniques for investigating inorganic materials on the local atomic scale --the arrangement of atoms in space around a central probe atom. The mostly spectroscopy-based techniques consider body distances, coordination geometry, and the local connectivity of the simple building units of a complex structure. The topics are solid-state nuclear magnetic resonance spectroscopy, X-ray absorption and emission spectroscopy, neutrons and neutron spectroscopy, the electron paramagnetic resonance spectroscopy of inorganic materials, and the analysis of functional materials by X-ray photoelectron spectroscopy.

QD476 9781118150924
**Organic Synthesis and Molecular Engineering**
Edited by Mogens Bro>ndsted Nielsen
Wiley, ©2014 460 p. $150.00
Chemists examine a representative sample of topics regarding the use of organic synthesis in molecular engineering, some tightly focused on a particular area and other surveying broader matters. Among the topics are organic building blocks for molecular engineering, the design and synthesis of organic molecules for molecular electronics, molecular storage systems for solar thermal energy storage and conversion, strategies to switch fluorescence with photochromic oxazines, recognizing carbohydrates, the synthesis and function of cyclodextrin-based artificial enzymes, and dendrimers in biology and nanomedicine.

## TECHNOLOGY (GENERAL)

T10 9781557536495
**Integrating Information into the Engineering Design Process**
Edited by Michael Fosmire and David Radcliffe (Purdue Information Literacy Handbooks)
Purdue University Press, ©2014 212 p. $29.95 (pa)
In this volume, engineering faculty, librarians, and information specialists from the US present 15 chapters on the application of information literacy in engineering design, for librarians and engineering educators working with students. They explain key concepts about information literacy, engineering design, and how engineers use information; present an information-rich engineering design model for the activities of engineering design and information-seeking and creating; and provide advice and tools on how students can be guided in learning to manage and integrate information based on each phase of a design project based on their model, including ethical considerations, team and knowledge management decisions, problem scoping through eliciting user feedback, gathering background information, investigating professional best practices, investigating prior art, evaluating the quality of information and incorporating it in evidence-based design decisions, searching out materials and components to embody the design concept, and organizing and documenting evidence to support

the design concept, as well as reflecting on the process and identifying lessons learned. The final chapter describes how to prepare students to incorporate information into engineering-related decision-making activities prior to design projects, and assess student learning outcomes.

T56 9783037858554
**Control engineering in materials processing; v.2.**
Title main entry. Ed. by Andrzej Kot. (Solid state phenomena; v.208)
Trans Tech Publications, ©2014 202 p.
$138.00 (pa)
Mechanical engineers discuss the role of control engineering in processing materials, especially in manufacturing contexts. Among the topics are wave packets as a model of localized disturbances propagating along cables, a system for measuring a child's foot pressure on a shoe sole, laboratory research on energy harvesting of ionic polymer metal composites, predicting the shape of non-ferrous pipe elements processed by electro-dynamic forming, and analyzing the dependence between stress change and resonance frequency for self-excited acoustical systems.

T57 9781118612262
**Fast sequential Monte Carlo methods for counting and optimization.**
Rubinstein, Reuven Y. and Ad Ridder, Radislav Vaisman. (Wiley series in probability and statistics)
Wiley, ©2014 182 p. $110.00
The book is based mainly on ten years of research by Rubinstein and his collaborators on efficient Monte Carlo methods for estimating rare-event probabilities, counting problems, and combinatorial optimization. It emphasizes cross-entropy, minimum cross-entropy, splitting, and stochastic enumeration methods. The material is for engineers, computer scientists, mathematicians, statisticians, and other theorists and practitioners who are interested in efficient simulation, particularly efficient combinatorial optimization and counting.

T59 9781439812600
**Cultural Ergonomics: Theory, Methods, and Applications**
Edited by Tonya L. Smith-Jackson, Marc L. Resnick, and Kayenda T. Johnson
CRC Press, ©2014 213 p. $89.95
Designers explain how to integrate cultural attributes into the design, development, and evaluation of systems to ensure that systems and products are inclusive and equitable for the intended users. Among the topics are global issues, the role of culture in the design and evaluation of consumer products, human-computer systems, the role of culture in the design and evaluation of risk communications, occupational safety and health, disaster management systems, and cultural ergonomics implications in forensics.

T65 9781466650114
**Using Technology Tools to Innovate Assessment, Reporting, and Teaching Practices in Engineering Education**
Edited by Firoz Alam (Advances in Higher Education and Professional Development)
Engineering Science Reference, ©2014 383 p.
$215.00
In 21 articles, engineers and learning specialists from Australia, Asia, and Portugal explore technology tools that can be used in assessment, reporting, and teaching in engineering courses in higher education. They consider the interaction between the mode of delivery and the design, structure, and implementation of the curriculum, addressing problem-based learning in traditional and blended learning environments, implementing a student-centered approach in a blended learning environment, and developing curriculum for capstone projects, mechanical design courses, renewable energy courses, and automotive engineering, including using real-world applications and module-based teaching. The second part presents case studies on the efficacy of discipline-specific online or electronic tools, such as mobile devices used for feedback and productivity, discipline-specific technological tools, and an electronic portal system, while the third part covers the use of generic online and electronic tools and how they can be implemented to improve student learning and engagement, with discussion of alternative modes of delivery, including the use of remote and simulated laboratories; the use of online collaborative learning tools; and online assessments and how to determine student readiness in taking them.

## ENGINEERING (GENERAL, CIVIL)

TA165 9780857095022
**Smart sensors and MEMS; intelligent devices and microsystems for industrial applications.**
Title main entry. Ed. by Stoyan Nihtianov and Antonio Luque. (Woodhead Publishing series in electronic and optical materials; no.51)
Woodhead Publishing, ©2014 538 p.
$290.00
Electrical and electronic engineers examine a

number of areas of sensors and micro-electromechanical structures (MEMS) for use in manufacturing, processing, and other industrial applications. The topics include what makes sensor devices and microsystems intelligent for smart, reconfigurable ultrasonic smart sensor platforms for non-destructive evaluation an imaging applications, dynamic behavior by smart MEMS in industrial applications, MEMS integrating motion and displacement sensors, and radio-frequency MEMS for smart communication microsystems.

TA169 9781118539422
**Applied Reliability Engineering and Risk Analysis: Probabilistic Models and Statistical Inference**
Edited by Ilia Frenkel, Alex Karagrigoriou, Anatoly Lisnianski, and Andre Kleyner (Wiley Series in Quality & Reliability Engineering)
Wiley, ©2014 413 p. $170.00
Scientists, analysts, mathematicians, and engineers share the current status of their special area of reliability science and engineering. They cover the areas of degradation analysis, multistate and continuous-state systems reliability; networks and large-scale systems; maintenance models; statistical inference in reliability; and systemability, physics-of-failure, and reliability demonstration. Among the topics are time series regression with exponential errors for accelerated testing and degradation tracking, network reliability calculation based on structural invariants, statistical inference for heavy-tailed distributions in reliability systems, and the effect of variance in field environmental conditions on the demonstrated reliability.

TA357 9780080982298
**Multiphase flow analysis using population balance modeling; bubbles, drops and particles.**
Yeoh, Guan Jeng and Chi Pok Cheung, Jiyuan Tu.
Butterworth-Heinemann, ©2014 365 p.
$150.00
Yeoh (U. of New South Wales), Cheung, and Tu (both Royal Melbourne Institute of Technology U.) comprehensively review the literature on particle-particle, and particle-fluid interactions in multiphase systems where particles could be gas bubbles, liquid drops, or solid particles. They emphasize the similarities and differences between the three phases of particle in ways useful for applied scientists, practicing engineers, graduate and undergraduate students, and researchers concerned with multiphase phenomena. Among the topics are the computational multiphase fluid dynamics framework, mechanistic models for gas-liquid and liquid-liquid flows, solution methods and turbulence modeling, and some applications of population balance with examples. Butterworth-Heinemann is an imprint of Elsevier.

TA401 9783037858264
**Explosion, shock wave and high-energy reaction phenomena; proceedings.**
International Symposium on Explosion, Shock Wave and High-Energy Reaction Phenomena (2d: 2013: Nago, Okinawa, Japan) Ed. by S. Itoh, J. Matsue, and K. Hokamoto. (Materials science forum; v.767)
Trans Tech Publications, ©2014 272 p.
$245.00 (pa)
Propagating explosion and detonation shock waves; the resulting dynamic deformation, fracture, and processing of materials; and new applications of shock waves are discussed in 44 selected papers. Among the topics are the high resolution numerical simulation of shock-to-detonation transition of condensed-phase explosives, developing a coupled fluid-structure interaction code for explosion problems, estimating the crater in reinforced concrete wall caused by miniblasting, deburring technology using concentrated underwater shock waves, and an experimental study on food seasoning treatment by high voltage electrical discharge with a shock wave food processor.

TA418 9781466587267
**Friction, Wear, and Erosion Atlas**
Kenneth G. Budinski
CRC Press, ©2014 277 p. $189.95
Budinski offers this tribological handbook for engineering students and professionals, beginning with a glossary of terms related to erosion, abrasion, and other forms of wear. Adhesive wear, abrasion, rolling contact fatigue, impact wear, lubricated wear, and tribocorrosion are discussed, covering their mechanisms, susceptible types of systems, and manifestations of damage. Solid particle and liquid droplet erosion and sliding and rolling friction are covered next, addressing similar issues. Materials for friction applications, surface engineering, and solutions to wear and erosion wrap up the book. The book is extensively illustrated with both black-and-white and color photographs showing examples of wear damage. A long list of appendices describes practical details of various surface treatments.

TA418 9781439884270
**Graphene-based materials; science and technology.**
Alwarappan, Subbiah and Ashok Kumar.

CRC Press, ©2014 202 p. $139.95
Alwarappan and Kumar analyze recent developments in graphene research, such as synthesis, properties, and important applications in several fields. After introducing graphene, they cover synthesis, surface characterization, application as gas sensors, biosensing and energy storage applications, and photonic and optoelectronic applications.

TA418 9781466570696
**Green Composites From Natural Resources**
Edited by Vijay Kumar Thakur
CRC Press, ©2014 405 p. $199.95
Chemists and engineers in various fields review a number of lignocellulosic reinforcing materials and different approaches to controlling their properties in order to produce environmentally friendly composites as alternatives to synthetic polymers. The topics include the valorization of agricultural by-products in poly(lactic acid) to develop biocomposites, hemp and hemp-based composites, bast fiber composites for structural engineering applications, a weathering study of biofiber-based green composites, potential biomedical applications of renewable nanocellulose, and vegetable oils for green composites.

TA418 9781466557307
**Polymer nanocomposite coatings.**
Title main entry. Ed. by Vikas Mittal.
CRC Press, ©2014 337 p. $169.95
Contributors from chemistry and materials science, but also the life sciences, explore coatings made with polymer nanocomposites added to change the function of the substrate. Such coatings are used in a wide range of fields such as food packaging and automobile paint. The topics include the effect of crosslinkers and fillers on microstructure and gas permeation, organic-inorganic hybrid coatings with enhanced scratch resistance properties obtained by the sol-gel process, protective coatings based on silsesquioxane nanocomposite materials, and ultrasound-assisted synthesis and its effect on the properties of calcium carbonate-polymer nanocomposites.

TA418 9781118686225
**Responsive Materials and Methods: State-of-the-Art Stimuli-Responsive materials and Their Applications**
Edited by Ashutosh Tiwari and Hisatoshi Kobayashi (Advance Materials Series)
Wiley, ©2014 439 p. $225.00
Aimed at a broad audience of researchers, engineers, and clinicians, this compendium edited by Tiwari and Kobayashi describes a wide array of materials with high responsiveness to specific environmental changes. The first and largest section is devoted to polymers, including thermoresponsive biopolymers, photoresponsive azobenzenes, functionalized polymer networks for drug delivery, engineering of responsive-material medical devices, polymers as adjuvants in immunotherapy, and various functions of cyclodextrins. Part 2 covers engineered nanomaterials, including further mention of polymers, hydrogels, carbon- and silica-based scaffolds, cancer diagnosis and treatment, quantum cutting, and conducting fibers. The third section briefly treats biosystems engineering in two chapters on redox biopolymers and thermoplastics produced with metallocene catalysts. Finally, the last chapter explores the potential of thorium mono-chalcogenides from a theoretical perspective.

TA455 9781926895529
**Foundations of high performance polymers; properties, performance, and applications.**
Title main entry. Ed. by Abbas Hamrang, Bob A. Howell, Gennady E. Zaikov, and A.K. Haghi.
Apple Academic Press, ©2014 393 p.
$149.95
Contributors from a number of fields examine features of high performance polymers and survey their applications. They cover commercially produced and modified starches, the production and application of polymer nanocomposites, the computational modeling of nanocomposite action in different media, applications in genetic engineering, fundamentals and basic concepts of nanopolymers, hints for producing nanomaterials in the laboratory, and green nanofibers. Distributed in the US by CRC Press, a Taylor & Francis Group company.

TA455 9780852969618
**Properties of amorphous carbon.**
Title main entry. Ed. by S. Ravi P. Silva. (EMIS datareviews series; no.29)
IEE, ©2003 367 p. $235.00
Covering all known aspects of amorphous carbon, this volume of papers by scientists and experts from around the world examines properties and growing applications of this multi- faceted semiconducting thin film material. The volume responds to a growing interest in future uses for amorphous carbon in areas including MEMS, electronic devices, medical applications, field emission cathodes, hard coatings, and optical coatings. Silva (electronics and physical sciences, University of Surrey, England) edits 57 contributions including solid-state nuclear magnetic resonance studies of a-C thin films, friction in di-

amond-like a-C, properties of a-C superlattices, and hydrogenated a-C optical coatings. Books International distributes the volume in the U.S.

TA654 9781466554054
**Modeling and Control for Micro/Nano Devices and Systems**
Edited by Ning Xi, Mingjun Zhang, and Guangyong Li (Automation and Control Engineering Series)
CRC Press, ©2014 163 p. $139.95
This book presents an integrated view of the field with a focus on theories and practices for practical implementation, demonstrating with example applications in biosensors, energy devices, and molecular and cellular systems. The topics include modeling and simulating silicon nanowire-based biosensors, optimizing organic photovoltaic cells, developing a dynamics model for epidermal growth factor (EGF)-induced cellular signaling events, modeling and the experimental verification of cell tensegrity, modeling swimming micro/nano systems in low Reynolds number, and modeling and analyzing the cellular mechanics involved in the pathophysiology of disease and injury.

TA1520 9781466592346
**Small scale optics.**
Yupapin, Preecha and Jalil Ali.
CRC Press, ©2014 171 p. $139.95
Yupapin and Ali (both physics, U. of Technology Malaysia) present a new design for a small scale optical device, a micro-ring resonator device, that can be used to generate forms of light on a chip. Optical spin, antenna, and whispering gallery mode are the major applications. Among the topics are the nonlinear PANDA ring, an optical mesh network, a molecular motor for drug delivery, cancer cell treatment by short pulse laser, and neuron cell communications.

TA1530 9781466583610
**Computational Nanotechnology Using Finite Difference Time Domain**
Edited by Sarhan M. Musa
CRC Press, ©2014 384 p. $179.95
Electrical and mechanical engineers explain computational techniques using the finite-difference time-domain (FDTD) method in technology to biologists, other scientists, and fellow engineers. Because it is extremely flexible and easy to implement, they say, it is an essential tool in modeling inhomogeneous, anisotropic, and dispersive media with random, multilayers, and periodic fundamental or device nanostructures. They survey applications in photonics and nanophotonics, nano-optics and quantum physics, optical metamaterials, the simulated trapping microspheres and nanowires with optical tweezers, photodetecting enhanced light absorption, and nanomedicine.

TA1634 9781568817255
**Image Statistics in Visual Computing**
Tania Pouli, Erik Reinhard, and Douglas W. Cunningham
CRC Press, ©2014 354 p. $69.95
An interesting and interdisciplinary approach to computer graphics and visualization, this collaborative effort begins with a statistical approach to human vision --determining regularities, patterns in visual data that our brains use to construct a visual representation of reality and then applying the concepts to the development in visual computing. Essentially, the explanatory path takes us from biology to mathematics to programming: from our brains' hardwired responses to statistical interpretation of the stimuli causing particular responses to a graphic implementation of those statistical patterns to create more realistic computer graphics...that would trigger the brain response in question. this is quite a rewarding exploration, mathematically dense and challenging, that takes us from basic statistical concepts (and their interpretation within biological context) to image statistics in two and three dimensions (wavelets, Markov fields, the statistics of color), via mathematical interpretations of gradients and edges, a discussion of image databases (with their own statistical challenges), and Fourier analysis --among other topics. A multitude of color illustrations illustrates major points.

TA1637 9781466576988
**Image Encryption: A Communication Perspective**
Fathi E. Abd El-Samie, Hossam Eldin H. Ahmed, Ibrahim F. Elashry, Mai H. Shahieen, et al
CRC Press, ©2014 404 p. $119.95
El-Samie, Ahmed, Elashry, Shahieen, Faragallah, El-Rabaie, and Alshebeili offer this volume on communications image encryption, assessing both the encryption aspects and practical considerations of conducting medium and efficient decryption at the endpoint. After an introduction to purpose, the book presents basic concepts of cryptography, algorithms, and issues particular to image encryption. Evaluation metrics are covered next. Several classes of encryption technique are then discussed, including homomorphic image encryption, chaotic image encryption, and special discussion of the diffusion mechanism for the ECB mode. The technique of orthogonal frequency division multiplexing is also addressed, with one chapter describing the model and one

chapter dealing with limitations. The last chapter presents example simulations, and an extensive pair of appendices provides MATLAB code for these simulations.

## ENVIRONMENTAL TECHNOLOGY

TD145 9781466586376
**Handbook of Mathematics and Statistics for the Environment**
Frank R. Spellman and Nancy E. Whiting
CRC Press, ©2014 838 p. $159.95
Spellman and Whiting present this applied mathematics reference for professionals in environment-related fields and students of environmental studies. The material is presented in twelve sections, the first of which reviews conversions, dimensional analysis, basic computations, modeling and algorithms, and application of algebra and trigonometry. The next few sections discuss broad categories of operations, including statistics, risk assessment, Boolean algebra, and types of calculations for economics and engineering. The remainder of the book goes into detail on the mathematics used in a number of specific environmental fields: soil mechanics, biomass computations, hydraulics and efficiency, health and safety, air pollution, water quality, wastewater, and stormwater management. The emphasis is on reinforcing the connection between mathematical concepts and practical problems, and detailed example calculations including unit cancellation are given in every chapter.

TD427 9780415644280
**Organic compounds in natural waters; analysis and determination.**
Crompton, T. Roy.
CRC Press, ©2014 295 p. $159.95
Crompton (retired from UK Rivers Authority, UK) presents this survey of occurrence and detection methodology for organic compounds in both fresh and saline water. The first several chapters cover different functionalities present in freshwater, including hydrocarbons, oxygen, nitrogen, phosphorus, sulfur, and halogen containing organics. Specially covered are surfactants, volatiles, and strategies for screening rather than quantifying target substances. Pesticides and herbicides receive a separate chapter, and different functionalities are covered together for detection in saline water. Naturally occurring pollutants, organometallics, and precipitation water quality are also discussed. Methodology is described briefly, intended to give a comparison of options rather than detailed experimental protocol.

TD899 9781118731758
**Waste Management in the Chemical and Petroleum Industries**
Alireza Bahadori
Wiley, ©2014 325 p. $155.00
Bahadori sets out the essential requirements for designing the process and engineering the equipment and facilities pertaining to wastewater treatment units, solid waste disposal, and wastewater sewer systems of oils and gas refineries, chemical plants, oil terminals, petrochemical plants, unconventional oil and gas industries, and other facilities as required. Among unconventional oil and gas he includes coal seam gas or coal bed methane, shale gas, and oil sands production. He covers wastewater treatment, physical unit operations, chemical treatment, biological treatment, wastewater sewer systems, sewage treatment, and solid waste treatment and disposal.

## MECHANICAL ENGINEERING & MACHINERY

TJ163 9781466555709
**Advances in high-performance motion control of mechatronic systems.**
Title main entry. Ed. by Takashi Yamaguchi, Mitsuo Hirata, and Chee Khiang Pang.
CRC Press, ©2014 305 p. $149.95
Mechanical engineers explore advanced control in mechatronic applications, particularly control systems designed for ultra-fast and ultra-precise positioning of mechanical actuators in mechatronic systems. They cover fast motion control using control structure with two degrees of freedom and optimal feedforward input, transient control using initial value compensation, precise positioning control in sampled-data systems, and dual-stage systems and control.

TJ213 9781466577008
**Cyber-physical systems; integrated computing and engineering design.**
Hu, Fei.
CRC Press, ©2014 378 p. $99.95
In cyber-physical systems, explains Ju, hardware/software resources that can compute, communicate, and control functions in a discrete, logical, and switched environment are integrated with natural or artificial systems that are governed by the laws of physics and operate in continuous time. He and colleagues introduce students, researchers, and engineers to the design and application of such systems. After setting out the basics, they cover design principles, sensor-based cyber-physical systems, civilian applications, and healthcare applications.

TJ223 9781466556447
**Modeling and Control of Precision Actuators**
Tan Kok Kiong and Huang Sunan
CRC Press, ©2014 251 p. $149.95
Kiong and Sunan report on new technologies in precision motion control that ultimately can be applied commercially. Writing for graduate students and engineers in precision engineering, they discuss the dynamic analysis of precise actuators and strategies of design for various control applications. The topics are nonlinear dynamics and modeling, the identification and compensation of preisach hysteresis in piezoelectric actuators, the identification and compensation of friction and ripple force, model predictive control of precise actuators, modeling and controlling air bearing stages, detecting and accommodating faults in actuators, and case studies.

TJ233 9781466583597
**Real-time rendering; computer graphics with control engineering.**
Wong, Gabriyel and Jianliang Wang. (Automation and control engineering)
CRC Press, ©2014 183 p. $89.95
A novel approach to computer graphics using control theory, this volume by two entrepreneurial engineers provides a framework for rendering in real time with optimization of both quality and speed of rendering. Rather than concentrating on specific application goals (visualization, virtual prototyping, or computer games), the authors take a more general approach, modeling the rendering process from a data-driven and black box approach. In a sense, they develop a simple rendering theory and architecture that would enable more complex applications to be built on top of it. They attempt to solve the usual problems of fluctuating performance and the frame latency problem by a systematic approach combining data-driven system identification processes with the selection and application of a suitable control strategy. From the foundations of 3D rendering to both linear and non-linear rendering processes to further abstractions of model-based and model-less control systems, they cover all that is necessary to provide a functional framework. Many code snippets using primarily MATLAB are included, as well as at least one patent for method and system for adaptive control of real-time rendering. The analysis consists of mostly original research and development.

TJ808 9780123970213
**Solar Energy Conversion Systems**
Jeffrey R.S. Brownson
Academic Press, ©2014 457 p. $120.00
Brownson applies a systems approach to designing solar power systems. His perspectives include the context and philosophy of design; laws of light; the physics of light, heat, work, and photoconversion; the many faces of the sky; Sun-Earth geometry; applying the angles to shadows and tracking; measuring and estimating the solar resource; solar energy economics; solar project finance; Sun as commons; systems logic of devices: patterns, optocalorics, and optoelectronics; concentrating light; and project design.

## ELECTRICAL ENGINEERING, ELECTRONICS, NUCLEAR ENGINEERING

TK2896 9781466587236
**Energy Harvesting with Functional Materials and Microsystems**
Edited by Madhu Bhaskaran, Sharath Sriram, and Krzysztof Iniewski (Devices, Circuits, and Systems)
CRC Press, ©2014 275 p. $139.95
Researchers summarize recent research into using functional materials and microsystems to harvest energy for use at scales ranging from ultralow-power implantable sensors to large-scale electrical grids. Among the topics are powering microsystems with ambient energy, low-power energy harvesting solutions for biomedical devices, thermopower wave-based microscale and nanoscale energy sources, the polymer solar cell as an energy source for low-power consumption electronics, monocrystalline silicon solar cell optimization and modeling, and piezoelectric thin films and their application to vibration energy harvesters.

TK2933 9781466513709
**Proton Exchange Membrane Fuel Cells**
Zhigang Qi (Electrochemical Energy Storage and Conversion)
CRC Press, ©2014 343 p. $189.95
An emerging technology still subject to controversy and with plenty of unknowns, PEMFCs are explained here in terms of their fundamentals, practices, and applications. Writing for a readership ranging from students and novices to skilled professionals and including engineers as well as management personnel, the author has employed simple approaches rather than sophisticated modeling software; math is confined to what can be done with a high school background and either Excel or a calculator. Coverage encompasses thermodynamics and kinetics, hydrogen H2, evaluation, and stationary, motive, and portable power.

TK2960 9783037859094
**Potential Development in Dye-Sensitized Solar Cells for Renewable Energy; Special Topic Volume**
Edited by Alagarsamy Pandikumar and R. Jothilakshmi (Materials Science Forum; Volume 771)
Trans Tech Publications, ©2014 177 p.
$138.00 (pa)
Physicists and material scientists and engineers summarize some recent developments in using dye-sensitized solar cells (DSSC) to achieve higher efficiency, focusing on components of the cells. Among the topics are dye sensitized solar cells using natural dyes as chromophores, mesoporous photo-anodes for dye-sensitized solar cells, the effect of nanograss and annealing temperature on dye-sensitized solar cells based on titania nanotubes, an electrochemical impedance spectroscopic study of dye-sensitized solar cells sensitized with Begonia malabarica Lam., and the positron annihilation characterization of titania-doped polystyrene.

TK5102 9781611973259
**Chaotic Signal Processing**
Edited by Henry Leung (Applied Mathematics)
SIAM, ©2014 178 p. $79.00 (pa)
Editor Leung presents this compendium on chaos theory as a method for processing signals with a random appearance. Leung authors the introduction, characterizing the problem of separating chaotic signal from noise and reviewing existing detection and estimation techniques. Contributions discuss on nonlinear dynamics for target recognition, exactly solvable chaos, logic in chaotic dynamics, and system identification using chaos. Chapter six describes the construction and optimization of a chaotic Laser Detection and Ranging (LADAR) system. The final contribution treats reverse engineering of complex dynamical systems using compressive sensing. Contributions are heavy with technical mathematics, but always return to an assessment of applied utility.

TK5105 9781466588271
**Human Activity Recognition: Using Wearable Sensors and Smartphones**
Miguel A. Labrador and Oscar D. Lara Yejas (Chapman & Hall/CRC Computer & Information Science Series)
CRC Press, ©2014 187 p. $99.95
Labrador and Yejas describe the automatic recognition of human activities from pervasive wearable sensors, as a component in monitoring health. In addition to collecting measurements of the variables of interest, they consider the inference layers required to determine the user's activity during a certain period of time. They focus on systems in which such inference is carried out on the smartphone of the person wearing the sensor. The material is for upper-level undergraduate students, researchers, and engineers interested in designing and implementing such systems.

TK5105 9780123978776
**Network Convergence: Ethernet Applications and Next Generation Packet Transport Architectures**
Vinod Joseph and Srinivas Mulugu
Morgan Kaufmann Pub., Inc., ©2014 585 p.
$69.95 (pa)
As the next-generation architectures continue their penetration of market, a need for a comprehensive text describing Ethernet application design for them is obvious. This is that book. Aimed at network designers and administrators, it provides a thorough reference to the subject, from emerging applications to large-scale business deployments. Chapters include the concepts of using VPLS in deployment, advanced MPLS Layer 3 VPN services, backbone bridging, using Seamless MPLS to scale packet Ethernet services, and quality of service in mobile IP networks of all generations. Emerging trend in packet optical convergence are covered, as well as several models for MPLS transport profiles. Appendices include two application scenarios, fully worked out, for overlapping and peer--to-peer interconnections. The general theme of the book is that of convergence of new developments, applications, and services that are emerging in Ethernet transport. An essential reference, full of practical details and solutions to common problems.

TK5105 9781466643055
**Solutions for sustaining scalability in Internet growth.**
Title main entry. Ed. by Mohamed Boucadair and David Binet. (Advances in Web technologies and engineering)
Information Science Reference, ©2014 270 p.
$190.00
Telecommunications technicians and researchers survey constraints and promising solutions for expanding the scalability limits of routing and forwarding tables on the Internet as it grows both larger and more complex. The topics include inter-domain traffic engineering using the origin preference attributes, the aggregatability of router forwarding tables, the routing architecture of next-generation Internet, a security analysis of the map-and-encap locator/identifier separation paradigm, and a metric-based proposal for

a hierarchical approach to reducing power consumption in core and edge networks.

TK5105 9780470905395
**Verification of Communication Protocols in Web Services: Model-Checking Service Compositions**
Zahir Tari, Peter Bertok, and Anshuman Mukherjee (Wiley Series on Parallel and Distributed Computing; 83)
Wiley, ©2014 256 p. $125.00
In response to the lack of robustness in loosely coupled SOA-based applications, this research develops a framework for verifying an underlying service composition by formalizing the corresponding BPEL specification and transforming it into an XML-based formal model. Two techniques reduce the time and memory requirements for model checking a service composition by storing a state as the difference from one of its neighboring states, and by generating the reachability graph for each module of a hierarchical model in parallel. The size of graph-based formal models is reduced by identifying structurally similar components in a flat model and clustering the components into modules.

TK6680 9781466648968
**Video surveillance techniques and technologies.**
Zeljkovic, Vesna. (Advances in multimedia and interactive technologies)
Information Science Reference, ©2014 349 p. $175.00
This manual will surely satisfy a wide range of readers: security and surveillance professionals, programmers, intelligence analysts, and probably even a paranoid home-owner --as long as she is not a mathematical lightweight. Approaching the concepts of video surveillance from a strongly theoretical and mathematically rigorous direction (the author is a signal and image processing specialist with expertise in development of mathematical models and algorithms for image analysis), the text dives head-first into moving object detection algorithms form the first chapter. Several mathematical models are treated in depth; the text moves then into practical applications: shape recognition, object identification, the problems of various adverse conditions (noise, lack of illumination, image classification) are covered, and industrial an quality control applications are described. The final two parts deal with an overview of video technology in general, and a brief tour through various devices and applications, including cameras, motion detectors and IP video surveillance systems. An interesting --and even enlightening --overview of this rapidly changing technology that is, for good or ill, is rapidly gaining importance in today's society.

TK7867 9781466508415
**Fading and Interference Mitigation in Wireless Communications**
Stefan R. Panic
CRC Press, ©2014 246 p. $129.95
Panic introduces fellow electrical engineers and students to some basic principles and the mathematical formalization of digital communications, and to recent developments in analyzing the performance of space diversity reception over fading channels in the presence of co-channel interference. He presents a unified method by which a system designer can compute the performance of digital communications systems characterized by a variety of modulation and detection types and channel models. The approach should provide an accurate evaluation for the performance of proposed communications scenarios, along with insight into the dependence of the performance on key system parameters.

TK7871 9781118394304
**Aggregation-Induced Emission: Fundamentals**
Edited by Anjun Qin and Ben Zhong Tang
Wiley, ©2014 422 p. $210.00
Editors Qin and Tang offer this foundational compilation on aggregation-induced emission (AIE). The book jumps right into synthesis and aggregation of siloles, germoles, and stannoles exhibiting AIE. Properties of a variety of AIE exhibiting materials are discussed, including 9,10-distyrylanthracenes, diaminobenzene cores, organic ion pairs, triarylamines, azobenzenes, pi-organogels, and polymers. Discussion of conjugation, supramolecular structure, and a chapter specifically addressing red-emitting materials are also included. Mechanistic studies investigate enhanced emission through restriction of molecular rotation, crystallization, and fluorescence spectroscopy. The last two contributions offer theoretical probes of the phenomenon through computational chemistry and estimation of small-molecule photophysical parameters.

TK7871 9781118511886
**Electrical Overstress (EOS): Devices, Circuits and Systems**
Steven H. Voldman (ESD Series)
Wiley, ©2014 344 p. $110.00
Voldman describes the basics and concepts of EOS and relates them to real-world processing in semiconductor manufacturing, handling, and

assembly. He also provides a technical base for quantifying EOS, highlighting both mathematical and physical analysis and the role and relationship of thermal physics. Other topics include fundamentals of EOS models, failure analysis, testing and simulation, EOL robustness in semiconductor technologies, chip level circuit design, prevention and control, and EOS program management.

TK7871 9781608077687
**Frequency-agile antennas for wireless communications.**
Petosa, Aldo. (Artech House antennas and propagation series)
Artech House, ©2014 339 p. $139.00
Frequency-agile antennas (FAAs), a subset of active integrated antennas (AIAs), show great promise for being able to handle the ever increasing volume of mobile wireless traffic. Designed to have a dynamically tunable frequency, they will be able to productively handle data transmission from handsets, laptops and wireless machine-to-machine communications. After a general description of antenna elements and frequency tuning techniques, the book goes on to explore FAA designs based on mechanical tuning techniques, tunable substrates, and continuous and discrete tuning with integrated devices. Along the way it examines the metrics used to evaluate FAAs. Larger fixed designs, such as cellular base station antennas also receive some attention. The book closes with a list of acronyms and symbols used throughout.

TK7872 9780124017009
**Microwave De-Embedding: From Theory to Applications**
Giovanni Crupi and Dominique M.M.-P. Schreurs
Academic Press, ©2014 456 p. $124.95
Crupi and Schreurs present this text on microwave de-embedding as an electrical engineering tool. The first chapter outlines the mathematical concept of de-embedding and its application to measurement of electrical properties and excision of noise. The remainder of the book goes into further detail on particular applications. The first contribution discusses millimeter-wave characterization of silicon-based devices. High-frequency noise in sensitive systems, EM analysis improvements upon double-delay calibration, large-signal transistor modeling, nonlinear radiofrequency behavior, microwave circuit design, and radiofrequency amplifier design based on EM analysis and transistor de-embedding are included. The final chapter covers theory of nonlinear embedding and de-embedding.

TK7874 9781466514263
**Nanoplasmonics; advanced device applications.**
Title main entry. Ed. by James W.M. Chon and Krzysztof Iniewski. (Devices, circuits, and systems)
CRC Press, ©2014 256 p. $159.95
Plasmons are the collective oscillation of a free electron cloud at optical frequencies, and nanoplasmonics is a field that focuses on controlling and manipulation them at nanometer dimensions. Many believe that plasmons will replace electronic circuits and photonic devices in the near future. Here physicists and engineers assess the stage of research and the potential for application in a number of areas. These include plasmonic nanorod-based optical recording and other data storage, plasmonic solutions for light harvesting in solar and sensing applications, polarization-dependent plasmonic chiral devices, resonant nanometric apertures in metallic films, and surface plasmon resonance sensing.

TK7882 9781466582422
**Advances in Biometrics for Secure Human Authentication and Recognition**
Edited by Dakshina Ranjan Kisku, Phalguni Gupta, and Jamuna Kanta Sing
CRC Press, ©2014 330 p. $129.95
Engineers describe several approaches to making the biometric identification or authentication of people more reliable and secure. The topics include a review of human recognition based on retinal images, the human gait signature for biometric authentication, a hand-based biometric for personal identification using a correlation filter classifier, extracting facial feature points to identify an object using the discrete contourlet transform and principal component analysis, and a case study from Norway of legal aspects and ethical issues in the use of biometrics.

TK7882 9780470642146
**Microwave Noncontact Motion Sensing and Analysis**
Changzhi Li and Jenshan Lin (Wiley Series in Microwave and Optical Engineering)
Wiley, ©2014 219 p. $119.95
Li and Lin review the history, theory, and technical details of microwave radar, its use to detect motion, and related technologies. Providing many application-oriented case studies, they illustrate the technology's use in healthcare, industrial, and military services. They cover the theory of microwave non-contact motion sensors, the hardware development of microwave motion sensors, advances in detection and analysis techniques, and

applications and future trends. The information could be helpful to researchers in microwaves, electronic circuits, signal processing, and healthcare.

TK7895 9781466590656
**Embedded and networking systems; design, software, and implementation.**
Title main entry. Ed. by Gul N. Khan and Krzysztof Iniewski. (Devices, circuits, and systems)
CRC Press, ©2014 279 p. $149.95
Electrical and computer engineers explore issues related to the design and synthesis of high-performance embedded computer systems, particularly system-on-chip as, mobile sensors, and video networks encompassing embedded devices. The topics include the co-synthesis of real-time embedded systems, methods for non-intrusive dynamic application profiling and soft error detection, the range of benchmarks required to analyze embedded processors and systems, on-demand communication topology updating strategy (OCTOPUS) for mobile sensor networks, game-theory models for selecting the camera in a video network, and an algorithm and sensitivity analysis for an ensemble-based approach to targeting mobile sensor networks.

TK7895 9781466560604
**Nanoscale Semiconductor Memories: Technology and Applications**
Edited by Santosh K. Kurinec, and Krzysztof Iniewski (Devices, Circuits, and Systems)
CRC Press, ©2014 428 p. $169.95
Thirteen chapters provide technical descriptions of a range of current and prototypical nanoscale semiconductor memory technologies, as well as applications. They have been organized into sections on static random access memory, dynamic random access memory, novel flash memory, magnetic memory, phase-change memory, and resistive random access memory.

## MOTOR VEHICLES, AERONAUTICS, ASTRONAUTICS

TL230 9781118648315
**Guide to Load Analysis for Durability in Vehicle Engineering**
Edited by P. Johannesson and M. Speckert (Automotive Series; 1)
Wiley, ©2014 434 p. $140.00
Johannesson and Speckert offer this load analysis text for vehicle designers. The book opens with an introduction on general concepts of durability and fatigue. Methods of load analysis are then covered, starting with "the basics" of amplitude- and frequency-based methods and multi-input loads. Editing of load signals, simulation of mechanical system response, random loads and load variation round out the methods section. The final section applies the methods to the design process, including customer sampling, choice of representative test loads, and verification. Appendices hold background information on fatigue models, statistics and probability, Fourier analysis, finite element analysis, multibody system simulation mathematics, and load analysis software.

TL240 9780768080520
**Software-hardware integration in automotive product development.**
Title main entry. Ed. by John Blyler.
SAE International, ©2014 113 p. $105.95 (pa)
Contributors from automobile manufacturing and other fields look at similarities and differences between the integration, verification, and validation of hardware and software at the chip, board, and network levels. The topics include adapting a virtual prototype for systems and verification engineering development, the hardware/software design and development process, testing the smart controller network for the chassis of tomorrow, a systems engineering approach to verifying distributed body control applications development, and analyzing interfaces and interface management of automobile systems.

TL784 9781466551138
**Radiophysical and Geomagnetic Effects of Rocket Burn and Launch in the Near-the-Earth Environment**
Leonid F. Chernoger and Nathan Blaunstein
CRC Press, ©2014 542 p. $149.95
Chernoger and Blaunstein report on experimental and theoretical studies on the impact that rocket or cosmic burn has on the upper ionosphere and the magnetosphere surrounding Earth at elevations from 1,000 to 10,000 kilometers, and the ecological consequences of such disturbance. They cover diagnostics of plasma perturbations by using Doppler radio sounding, diagnostics of plasma wave disturbance by incoherent scatter and Doppler radars, diagnostics of geomagnetic disturbances, rocket burn and launch and radio communication, and ecological problems in near-the-earth space activity.

## MINING ENGINEERING

TN271 9780124200234
**Seismic data analysis techniques in hydrocarbon exploration.**
Onajite, Enwenode.
Elsevier, ©2014 237 p. $129.95
This is a practical handbook for geoscientists working in the hydrocarbon extraction industries (oil and gas, specifically), on using seismic data in hydrocarbon exploration. The first part deals with basic geology and seismic data collection, the second provides details on seismic data processing, and the third addresses seismic data interpretation. The book is extensively illustrated throughout (almost entirely in color) with charts, tables and seismic imaging reproductions. The author was a research geophysicist with The Shell Petroleum Development Company in Nigeria, and is professionally affiliated with several exploration geophysics societies.

TN871 9781466647770
**Risk Analysis for Prevention of Hazardous Situations in Petroleum and Natural Gas Engineering**
Edited by Davorin Matanovic, Nediljka Gaurina-Medimurec, and Katarina Simon (Advances in Environmental Engineering and Green Technologies)
Engineering Science Reference, ©2014 415 p. $185.00
A group of engineers from Croatia and the US offers 16 chapters in this volume on risk analysis for the prevention of hazardous situations in petroleum and natural gas engineering. It focuses on the engineering analysis of potential hazards and risk assessment in drilling; completion, production, workover, and formation treatments; and the gathering, transportation, and storage of hydrocarbons; as well as the sources and triggers of hazards and remedial and controlling actions. Chapters address basic terms, dilemmas, methods of risk analysis, impacts, occurrence, consequences, and risk acceptance criteria and the ALARP (As Low As Reasonably Practicable) framework; wellbore instability problems and their causes and risk assessment; stuck pipe risk; lost circulation management; simultaneous operations; the Macondo 252 disaster; risk analysis of completion and production systems; irreducible casing pressure; the risk to the environment from hydraulic fracturing operations; workover impact on accidental risk; gathering systems and processing facilities risk analysis; activities in oil and gas processing for avoiding or minimizing environmental impacts; transportation risk analysis; oil and gas storage tank risk analysis; carbon dioxide underground storage and wellbore integrity; and petroleum industry environmental performance and risk.

## CHEMICAL TECHNOLOGY

TP155 9781466517332
**Process plants; shutdown and turnaround management.**
Sahoo, Trinath.
CRC Press, ©2014 382 p. $159.95
Mechanical engineer Sahoo shares insights he has acquired from 20 years experience managing the shutdown and turnaround of chemical process plants. The information could be useful to planners, executors, plant managers, and decision makers facing such a project. He walks step-by-step through all the phases: initiation, planning, executing, controlling, closing, and evaluation. Among his topics are estimating, shutdown contract management, communication package, joint integrity, and commissioning.

TP156 9780470917381
**Monitoring Polymerization Reactions: From Fundamentals to Applications**
Edited by Wayne F. Reed and Alina M. Alb
Wiley, ©2014 473 p. $150.00
As new, stimuli-responsive "intelligent" polymers are developed, monitoring polymerization reactions for deviation from ideal cases and to gain more understanding of their underlying kinetics and mechanisms will become more and more important to successful production and process development, including use of energy and feedstocks, conservation of non-renewable resources and enhanced product quality and reliability. This guide to the processes themselves and monitoring methodologies covers all materials necessary for application: several chapters describe the current knowledge of polymerization reactions and kinetics, a large section details existing monitoring methods (including spectroscopy, calorimetry, densimetry and rheological measurements); automatic monitoring is discussed with its specific applications and projections of future outlook. Polymerization reactors are described, from the standpoints of both mathematical modeling and practical issues of design and operation. Finally, several specific industrial applications are discussed, including applications in pharmaceutical biotechnology and the production of polymers form natural products. The authors are a group of international academics and practitioners.

TP159 9783527332137
**Heterogeneous catalysts for clean technology; spectroscopy, design, and monitoring.**
Title main entry. Ed. by Karen Wilson and Adam F. Lee.
Wiley-VCH, ©2014 478 p. $190.00
For catalytic chemists and engineers across the clean technology community, chemists provide information on next-generation catalyst formulations, process operation, and online monitoring in the field. They also expose graduate and undergraduate students of heterogeneous chemistry to the fundamental physical principles underpinning an array of spectroscopic methods and synthetic strategies that have been adopted to prepare high performance nanocrystalline and nanoporous catalysts, and to valorize biologically derived multi-functional feedstocks through processes that are economical in both atoms and energy.

TP339 9781466553392
**Producing fuels and fine chemicals from biomass using nanomaterials.**
Title main entry. Ed. by Rafael Luque and Alina Mariana Balu.
CRC Press, ©2014 324 p. $119.95
Chemists survey approaches to producing energy and high added-value chemicals by using innovative nanomaterials in energy storage, solar conversion, biomass and waste valorization, and other practices. Among their topics are green carbon nanomaterials from biomass to carbon, carbon materials and their energy conversion storage applications, the catalytic reforming of biogas into syngas using supported noble-metal and transition-metal catalysts, nanostructured solid catalysts in the conversion of cellulose and cellulose-derived platform chemicals, chemocatalytic processes for producing bio-based chemicals from carbohydrates, and tunable biomass transformations by means of photocatalytic nanomaterials.

TP761 9780124045859
**Handbook of Liquefied Natural Gas**
Saeid Mokhatab, John Y. Mak, Jaleel V. Valappil, and David A. Wood
Gulf Professional Publishing, ©2014 589 p. $99.95
The reference for liquefied natural gas (LNG) plant designers, engineers, and operators, and project developers and managers covers the complete LNG supply chain from liquefaction to regasification. It also summarizes the industry's fundamentals, engineering, and design principles, so can be used as a textbook for students in petroleum and chemical engineering curricula. The topics include gas conditioning and nitrogen gas liquid (NGL) recovery technologies, energy and exergy analyses of natural gas liquefaction cycles, process control and automation of LNG plants and import terminals, the dynamic simulation and optimization of LNG plants and import terminals, safety and security aspects, and project management. Gulf Professional Publishing is an imprint of Elsevier.

TP1142 9781895198614
**Databook of Antistatics**
George Wypych
ChemTec Publishing, ©2014 482 p. $285.00
Wypych provides information about more than 300 substances that can be added to material to reduce their propensity to create static electricity. They are arranged in sections on organic materials, powders, fibers, polymers, and masterbatches. The entries cover general information, physical properties, health and safety, ecological properties, and use and performance. Within each of these categories are units and values for such matters as solubility in water at 25 C, autoignition temperature, aquatic toxicity, and recommended dosage. Distributed in the US by William Andrews, Inc.

TP1183 9781466558120
**Polymer nanocomposite foams.**
Title main entry. Ed. by Vikas Mittal.
CRC Press, ©2014 244 p. $169.95
Materials scientists and engineers describe foams to which polymer nanocomposites have been added to alter such qualities as porosity, strength, and stiffness. Among the topics are nanotoughening and microtoughening of polymer syntactic foams, extruding polypropylene/clay nanocomposite foams, processing polymer nanocomposite foams in supercritical carbon dioxide, the fabrication and properties of carbon nanotube-polymer nanocomposite aerogels and related materials, and nanocomposite foams from high-performance thermoplastics.

## PUBLISHING, LIBRARY SCIENCE, BIBLIOGRAPHY

Z675 9781555709693
**Data Management for Libraries: A LITA Guide**
Laura Krier and Carly A. Strasser (LITA Guides)
ALA Techsource, ©2014 104 p. $58.00 (pa)
Krier and Strasser offer guidance to librarians who are dealing with the National Science Foun-

dation's new policy that grant applications must include data management plans. They cover what data management is, starting a new service, an overview of data management plans, the data management interview, metadata, data preservation, access, and data governance issue.

Z675 9780838912089
**Reinventing the library for online education.**
Stielow, Frederick.
ala editions, ©2014 306 p. $75.00 (pa)
How can academic libraries prove their worth? How can a library control its destiny with collections that are no longer owned or physically housed? This work for advanced students and librarians considers the present and future of web-based and virtual academic libraries as they continue to respond to web apps and other digital technology changes in online education. The book is written in plain language, not scholar-speak, and offers a lively b&w layout with case and research boxes, margin notes, b&w screenshots, and many bullets and checklists. The book begins by giving technical background on the Web and its effects on academic libraries, and the library's role in the new information economy. The rest of the book is based on the author's practical experiences using a virtual campus-based classroom/research information services (CRIS) model for academic libraries. The model offers practical managerial strategies for the implementation of an academic online library, with emphasis on a for-profit virtual campus. The book includes a webliography. Stielow is head of American Public University System's Classroom/Research Information Services.

Z675 9780838986844
**Virtually Embedded: The Librarian in an Online Environment**
Edited by Elizabeth Leonard and Erin McCaffrey
Assoc. of College & Research Libraries, ©2014
188 p. $52.00 (pa)
The growth of online sources of information, along with increasing distance education has led to a gradual shift in academic librarianship --from providing reference services to instructing students in information literacy. The 12 contributions presented here embody some of the best thinking and programs for embedding librarianship in the university's research and coursework. The volume is arranged in four parts: The Evolution of Embedded Librarianship, Developing Programs in the Online Embedded Environment, Online Embedded Librarians --Outside the Classroom, and Embedded in the Bigger Picture --Scaling Online Embedded Librarianship. Along the way it considers efforts in an online graduate program, military distance education, and at the Open Polytechnic of New Zealand. Processes covered include embedding librarians in e-learning to "teach the teacher," use of a Web 2.0 toolkit, use of course-specific and subject-specific LibGuides from Blackboard, and ways to get involved in massively open online courses (MOOCs).

Z678 9780838911952
**Getting started with evaluation.**
Hernon, Peter and Robert E. Dugan, Joseph R. Matthews.
Am. Library Association, ©2014 242 p.
$65.00 (pa)
Probably the hardest part of evaluating an academic library is getting started with it. Here, Hernon (library and information systems, Simmons College), Dugan (dean of libraries, U. of West Florida), and consultant Matthews start with the basics of evaluation. They cover the essence of evaluation, evidence-based planning and decision-making, library metrics, internal planning and decision making, external evaluation to inform stakeholders, guiding continuous improvement, measuring satisfaction, measuring return on investment, assessing the value of the library and its services, using and communicating the results, and positive organizational change.

Z710 9781856049337
**Delivering Research Data Management Services: Fundamentals of Good Practice**
Edited by Graham Pryor, Sarah Jones, and Angus Whyte
Facet Publishing, ©2014 242 p. $54.95 (pa)
With the sheer amount of data being generated by digital research output, there is a need to develop a robust data management service infrastructure for digital research. This collection describes the need for such an infrastructure, explains the necessary components and processes, and presents case studies of such services. The first five chapters address introductory matters; the spectrum of roles, responsibilities, and competences; the pathway to sustainable research data services; and the range of components of research data management infrastructure and services. Case studies are then presented from Johns Hopkins U., the U. of Southampton, Monash U., the UK Data Service, and the Jisc Managing Research Data programmes carried out at UK universities. Distributed in the US by Neal-Schuman.

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