On the Cover

On December 2, 1942, Chicago Pile-1 (CP-1) became the world's first nuclear reactor as a part of the Manhattan Project. It was built under the stands at the University of Chicago's Stagg field. It was initiated by Enrico Fermi and became the first man made self-sustaining nuclear chain reaction. The pile was made of graphite and uranium with "control rods" of cadmium, indium, and silver. There was no radiation shield or cooling system. The reaction was allowed to take place for 28 minutes before it was shut down. The image on the cover is a drawing of the reactor.

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From the Editor

Abby Bedford

And another year comes to a close. Thank you to everyone who worked so hard to make the Science and Technology Divisions so worthwhile. Conference was truly a success!

As the year closes and we transition from 2013 to 2014, we also transition in our slate of officers. This year, SciTech News is no different. I will be stepping down as editor after this issue. Be sure to welcome Jeremy Cusker as editor and our new assistant editor, Christine Malinowski. Thanks to both of you for stepping up to serve the various divisions in this vital way!

Happy Holidays, everyone!
SciTech News Call for Articles!

SciTech News is looking for a few good authors!

If you have a research project, a new service in your library, a new instructional method, or other information you’d like to share with your colleagues, please consider writing for SciTech News. In addition to the regular articles, we now have a refereed section. Colleagues will review your article and provide feedback. Accepted articles will be published in the new electronic SciTech News. This is an excellent venue to get your research and ideas out to a group of interested readers and get that important refereed article for your dossier or annual review.

For additional information, contact Editor Abby Bedford (abby.e.bedford@gmail.com) or Review Board Chair Bonnie Osif (bao2@psu.edu). Articles for the refereed section may be submitted to the Review Board Chair at bao2@psu.edu.
It’s a wrap for my year as chair and program planner for the Science-Technology Division. As the chair and with the help and support of the board and the committee chairs, we provided eight programs at the 2014 San Diego annual conference, plus a continuing education workshop on patent research and a post-conference tour. At the annual conference in San Diego, we also awarded four travel stipends to new and international members, provided mentoring and a newcomers lunch and honored our members with the Sci-Tech Achievement Award (Joe Kraus) and the Impossible Award (Susan Shepherd). Outside of the annual conference, we co-sponsored a webinar on predatory publishing with the Silicon Valley Chapter and appointed an assistant editor for STN.

I particularly want to commend the Sci-Tech Committee Chairs and committee members who work on projects throughout the year, provide awards and professional development opportunities, welcome new members and contribute articles to STN. Nevenka, as incoming Chair, is currently working on the programs and events at the 2014 Vancouver Conference. For 2014, instead of our Annual Awards Breakfast and Business Meeting, we will be holding a virtual, web business meeting before the conference in May 2014 and then hosting an evening reception on Sunday, June 8, 2014 from 7:30-9:00 pm to thank our members and honor our award winners. Nevenka will be sending out more details on this event and all of the other programs planned for Vancouver via the listserv and the next issue of STN.

Roger Beckman, chair of the Archives Committee has digitized the issues of SciTech News he received from Martha Kirby dating between 1966 and 1987. A library school intern, Margaret Janz, cut them apart and scanned them and the PDFs have been sent to STN for posting with the current issues. Sixty-five issues (starting with vol. 20, issue 2 through vol. 41, issue 4) were digitized. Unlike the more current STN issues, theses older volumes are one PDF file per issue. Roger is still seeking newsletters issues before volume 20 as well as a few issues between volume 20 (1966) and volume 40 (1986). If you have any issues to contribute, contact Roger (beckmanr@indiana.edu).

This year we had both new and long-standing members step up to chair committees. Janet Hughes is the new chair of the Awards Committee, Mary Frances Lembo is the new chair of the Professional Development Committee, Anna Ren is the new chair of the Membership Committee and Heather Lewin is the new chair of the Student Relations Committee. In addition, Sue Brewsbaugh is continuing as chair of the Strategic Planning Committee and Bill Jacobs is continuing as chair of the Public Relations Committee. If you would like to volunteer to work on any of these committees, please contact...
the chair listed above.

For 2014, I will continue to work with the Sci-Tech Division as past chair and chair of the Vendor Relations Committee. The Board has also created a new position for our division, Program Planner, to develop the programs and events for the 2015 Boston Conference in consultation with the chair-elect and other members of the board.

Thanks again for your membership and your trust. I think with your help and volunteer spirit, our division will continue to grow and provide professional development opportunities for our members in 2014 and beyond.

Helen Josephine
2013 Chair
Science-Technology Division
The Candidates for Chair-Elect and Secretary

We would like Sci-Tech Division members to vote for the Chair-Elect and the Secretary of the Division this year.

For more information about the candidates, please visit http://scitech.sla.org/2013/11/the-candidates-for-chair-elect-and-secretary/ or see the biographies of the candidates below.

Sci-Tech Division members will receive a direct email with the URL of the voting location. (For the members who don’t have any or a valid email address registered with SLA, you will receive a letter in the mail with the URL.)

Please vote by Monday, December 9, 2013. I will send out a reminder email before the deadline.

Candidate for Chair-Elect Sheila Rosenthal

Sheila is currently a Senior Librarian and member of the Library Faculty at Carnegie Mellon University (CMU). Since 2004 she has held the position of Manager of Library Services at the Carnegie Mellon Software Engineering Institute (SEI) Library, where she has been employed for the past twenty six years. The SEI Library is part of Corporate and Technical Communications within the SEI and operates independently from the Carnegie Mellon University Libraries. In June 2002, Sheila received the University Libraries’ Faculty Achievement Award for Excellence in Customer Satisfaction.

Sheila is very active in the Special Libraries Association (SLA). In the Pittsburgh Chapter of SLA, Sheila served as Secretary from 1998-2000 and was Chapter Archivist from 2002-2008. She served as the Chair of the Awards Committee for the Science-Technology Division since 2007 and is the incoming chair of their International Affairs Committee beginning in 2014.

Sheila is confident that her experience as Manager of the SEI Library for the past 10 years as well as the positions she has held within SLA, make her a very strong candidate for Chair-Elect of the Science-Technology Division.

Candidates for Secretary

Tom Moskal

Tom earned his B.S. in Biology from the University of Maryland, College Park, and his DVM from the VA-MD Regional College of Veterinary Medicine in Blacksburg, VA. Prior to and since becoming a veterinarian, Tom has
Candidates for Secretary

Tom Moskal

Tom earned his B.S. in Biology from the University of Maryland, College Park, and his DVM from the VA-MD Regional College of Veterinary Medicine in Blacksburg, VA. Prior to and since becoming a veterinarian, Tom has been interested in studying nature from a zoological viewpoint. He has worked with many species of birds, reptiles and mammals including whooping cranes, Andean condors, rattlesnakes, and monkeys. His favorite scientific interests include comparative biology, comparative medicine, virology, entomology, ornithology, cell biology and immunology.

This year Tom completed his MLIS online from Drexel University’s iSchool with a concentration in digital libraries and digital library technologies. As a newly-minted information professional Tom’s interests are in museum librarianship (medical or natural history), clinical medical librarianship, building digital libraries, working with emerging technologies, bibliometrics, network analysis using mapping, management of information organizations, and outcomes-based assessment of library programs.

Tom’s extracurricular interests include travel, travel photography, art history and music.

Anna Ren

Anna has master’s degrees in both Mechanical Engineering and Library and Information Sciences and is currently an Engineering Librarian and Operations Manager of the Seeley G. Mudd Library at Northwestern University. In her position, she supports collection, research, and instruction related to all engineering disciplines taught at Northwestern University, manages daily operation of the circulation unit, and handles facility related issues.

Anna has been a member of SLA since 1996 and active in the Sci-Tech Division. She has served on numerous committees during the past 16 years, including Chair of the Networking Committee, Communications Committee, Auditor, e-Discussion Listserv Manager, Webmaster, SLA Ethics Ambassador, and as a member of the Awards Committee, Nominations and Elections Committee, Membership Committee, and the Vendor Relations committee.

Anna received the 2008 Science-Technology Achievement Award for her outstanding service and contribution to the Science-Technology Division of SLA.

Anna is excited by the opportunity to become more involved with the Division as Secretary and to give back to SLA, since she has benefited greatly as a member.
Featured Member:  
**Joe Kraus**  
Collections & E-Resources Analysis Librarian  
University of Denver  
MLS from University of Maryland, College Park  
Member of SLA since 1994

**Tell us why you wanted to become a librarian.**

The short answer is because I like to help others find the information that they need. I also like learning about and using technological devices that can help people access more information in ways that are better suited to them. For the longer version, I wrote up how I found librarianship here, http://www.nuthingbut.net/2009/12/how-i-found-librarianship.html

**What are some of your interests outside of librarianship?**

Every once in a while, I like to go skiing with my child (but he likes to snowboard), golf, go camping, and sometimes take the telescope out for some observing. I also like to explore different styles and types of beer, but I am just a moderate beer drinker; I am definitely not a beer snob.

**What was your background before you became a Collection Development librarian?**

I am currently the Collections & E-Resources Analysis Librarian at the University of Denver (DU). I had been a general science and engineering librarian for 14 years at DU before I transitioned to this new role last year.

Before DU, I was at George Mason University as their Engineering Librarian from 1995 to early 1998.

**Tell us a little bit about your current position.**

I work with the Collection Development Team to evaluate usage statistics for many of the packages that we subscribe to. I also work with some of the E-Resources staff to troubleshoot access problems and to address other technical service issues.

**What organizations are you involved in?**

In addition to the Sci-Tech Division of SLA (I am the Past-Past-Chair right now), I am also involved with the Academic Division this year. I helped the Academic Division create the Scholarly Communication Section, and we are going to have our first session at the 2014 SLA Conference in Vancouver. I try to stay active in the Rocky Mountain Chapter of SLA. Besides SLA, I have been involved with organizing the STELLA Unconferences (http://stella-group.wordpress.com/) and I enjoy attending the Science Online Conference (http://scienceonline.com/) in North Carolina when I get the chance. I am also a member of ALA and ACRL, but it has been a while since I have attended one of those two conferences.

**What do you find most interesting about your work?**

When I evaluate usage data, I like determining which packages get used, and which are underutilized. This helps us figure out our value for the...
money.

**What do you think is the most interesting issue in librarianship today?**

The most important issue that librarians face today is the serials crisis, and that has turned into the scholarly communications crisis. Libraries have done a great job of providing information and services to their patrons (or clients or customers or students or whatever you want to call the people that we serve). However, during the course of our mediation, we have also shielded our patrons from the cost of the information and services they are receiving. A small number of patrons may know the budget of the library in total, and most patrons do not know the cost to the library of any specific article, journal, database, chapter, or book that they are using. Some publishers have learned to take advantage of the situation by continually raising their prices, since libraries are not as price sensitive as individual purchasers of information. In any case, the situation has gotten really out of whack, and this is providing librarians an opportunity to discuss the situation with more of our patrons, researchers, scholars and students. This is the main reason I have been an advocate for greater open access to scholarship.

**What has been your biggest professional challenge?**

At work, I try to keep up with a mountain of email each day. I have employed a variety of time and personal information management tricks and tools, and some have worked better than others. As an open access advocate, I have worked on several projects that are small steps in LIS publishing, but many small steps after several years can lead to a good distance. The newest big challenge for me is to help the Journal of Creative Library Practice (http://creativelibrarypractice.org/) grow over the next couple of years.

**What advice would you give a new member of SLA, or a new Librarian?**

I recommend that new members and new librarians read widely to gather information and perspectives from as wide a network as possible. Read outside of the profession. When you first attend a local, regional or national conference, it can be tough to walk into a room where it seems like everybody knows everybody else, but that is probably not the case. Just go in and make small talk and chit chat even if you are nervous. You will not die. The profession needs new viewpoints and fresh eyes to solve old problems more than ever.

*Format of column and interview question ideas derived from Medical Library Association News Bulletin, member spotlight section.*
Science-Technology Division New Members
Submitted by Sarah Oelker, Membership Committee Chair, Science-Technology Division

The Science-Technology Division welcomes its new members:

Geraldine Clement-Stoneham
Epsom
United Kingdom

Dorothea Coiffe
New York, NY
USA

Christy Confetti-Higgins
Longmont, CO
USA

Nicole Dutton
Somerville, MA
USA

Rebecca Fernandez
Antonio, TX
USA

Loren Hackett
Englewood, CO
USA

Gabriele Hysong
Indianapolis, IN
USA

Hope Lappen
Alexandria, VA
USA

Kathleen McGlaughlin
Greenbelt, MD
USA

Thomas Moskal
Ellicott City, MD
USA

Vincent Scovetta
Coram, NY
USA

Kelli Trei
Decatur, IL
USA
Greetings to all Chemistry Division members. This is my last column as Chair of the Chemistry Division.

The year has gone by quickly and I am now looking forward to handing over the reins to our incoming chair, Valerie Tucci. As you know, Val has been busy planning the 2014 Annual Conference in Vancouver. The program lineup looks exciting and I hope many of you are able to attend the conference and participate in the Chemistry Division’s programs and events in Vancouver. This will be a short column as the year is winding down. I had fun planning the 2013 conference with my co-planner Luti Salisbury. The Chemistry Division programs were a success thanks to all the volunteers - too many to name in this short space! Now all eyes and efforts are upon Vancouver in 2014.

Congratulations go to Ye Li from The University of Michigan who was recently elected Chair for 2015. Ye won the Marion E. Sparks Award for Professional Development in 2010. Congratulations are also in order for Linda Galloway from Syracuse University who will serve as Secretary for a two-year term beginning in 2014. Linda was the winner of this year’s ACS Publications SLA Travel Scholarship. Both Ye and Linda have been active members of SLA and the Chemistry Division.

My year as chair has been reward-
The Materials Research & Manufacturing Section of the Chemistry Division Welcomes Its New Members

Jared Hannah
NOVA Chemicals Corporation
Library
2118 10 Prestwick Bay Se
Calgary, AB T2Z0B3

Tina Qin
366 W. Circle Dr. Room E217
East Lansing, MI 48824

Grace Zhang
Guangzhou CCM Information Science & Technology Co, Ltd.
17th Floor, Huihua Commercial & Trade Building, No.80 Xianlie Zhong Road
Guangzhou 510070
P.R.China
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.

The Engineering Division has accomplished much in 2013. We began work on the first ever Division Strategic Plan.

We started a Buddy Program for new Conference attendees and offered a new award, the $1,500 Momentum Press SLA Annual Conference Grant. We updated online Member Profiles and posted historic Board rosters on our website.

Planning for the 2014 Annual Conference is well on its way. All of our proposals were accepted by headquarters. In addition to the traditional events (Aerospace Section Breakfast, Division Lunch Meeting, and the Standards Update), your 2014 Conference Planner Beth Thomsett-Scott is arranging: “Engineering Café,” “Engaging Users with Technology,” and “Crossing Boundaries.” Look for information on these exciting programs early next year.

I thank the Engineering Division Executive and Advisory Boards for their hard work. I also thank them for allowing me to practice leadership skills and improve them in a safe environment. I discovered that I’m über organized and that I still need to work on public speaking. Board members encouraged and guided me along the way.

Special thanks go out to outgoing Treasurer Mary Whittaker. Mary served two terms (four years) and efficiently handled the Division’s finances. She was always responsive to questions.

I also thank Betty Edwards, 2013 Conference Planner, who developed fantastic, well-received programs for the San Diego Conference. Her commitment to the Division demonstrates her professionalism and dedication to SLA. Lastly, thanks to all of the committee members who assisted the Chairs. They helped the Board operate efficiently and their contributions are very much appreciated.

Incoming Chair Andy Shimp will lead the Board in 2014 and he is more than capable of handling Division affairs. We are in good hands.

I’ve enjoyed working with the member volunteers who are dedicated to furthering the goals of the Division and to ensuring sustainability and growth. I made new friends, gained self-esteem, and raised the visibility of my Library (and myself) within my company.

I hope that you choose to get involved so that you can reap benefits such as skill development and network building. As a Division member, you’re a stakeholder with a vested interested in our success. By volunteering, you
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- Light Sources & Illumination 16,200+ papers
- Lithography & Microelectronics 26,100+ papers
- Metrology 26,600+ papers
- Nanotechnology 7,700+ papers
- Optics & Astronomy 165,000+ papers
- Remote Sensing 25,500+ papers
- Sensors 56,000+ papers

Visit www.SDLinfo.org for information on subscribing.
can shape the Division and help other information professionals. If you’re not ready to commit to a Chair position, volunteer to be a Committee Member. It’s a great introduction to Division and SLA operations. You get back from the Division (and SLA) as much as you put in. The Division is only as good as the members who step forward to volunteer. You’ll benefit from volunteering and it’s a great way to show that you’re the consummate professional.

Finally, thank you, Engineering Division members, for the opportunity to serve. It has been a pleasure representing the Division.

### Call for Nominations and Applications

**$1000 IEEE Continuing Education Stipend – Call for Applications**

Stipend to attend the SLA Annual Meeting in Vancouver, B.C., Canada, June 8-10, 2014

IEEE (Institute of Electrical and Electronics Engineers) is sponsoring for SLA Engineering Division members a travel stipend up to $1000 toward payment of expenses incurred while attending any Continuing Education course offered at the annual SLA conference in Vancouver, B.C., Canada, June 8-10, 2014.

The IEEE Stipend will be given to the qualified member who submits an essay, of three or fewer double-spaced typed pages, which is judged to be the best paper that addresses “How the member will benefit professionally from a continuing education course.” Please email Stephanie Sheldon (stephanie.sheldon@lmco.com) for a list of Continuing Education courses offered during the SLA 2014 conference. The winner will also be required to submit an article to the Engineering Division newsletter (SciTech News) within twelve months of completion on how the course helped them in library applications.

Qualifications for Entering Award Competition:
Be a member of the SLA Engineering Division in good standing at the time of applying for the award.

Special Instructions:
Type your full name (without any additional personal information) at the top of each essay page. Double space the typing on all pages.

The winner must be present to accept the award at the annual Engineering Division Business Meeting during the SLA 2014 conference.

Submit Entries for the award to:
Stephanie Sheldon
E-mail: stephanie.sheldon@lmco.com or to:
Stephanie Sheldon, SLA-ENG Awards Committee
Lockheed Martin Aeronautics Company
Company Research Library, MZ 0124
1011 Lockheed Way
Palmdale, CA 93599
Call for Nominations and Applications

SLA Engineering Librarian of the Year Award sponsored by IHS

The Engineering Librarian of the Year, sponsored by IHS, highlights the accomplishments and contributions of SLA Engineering Division members to the engineering librarian profession. The winner must be present to accept the $1500 award at the annual Engineering Division Business Meeting held during the annual SLA conference in Vancouver, B.C., Canada June 8-10, 2014.

Prospective candidates are encouraged to nominate themselves, or they may be nominated by a colleague or associate.

Criteria for entry are:
1. Be a member of the SLA Engineering Division in good standing at the time of applying for the award.
2. Distinguished achievement(s) in the engineering library profession, through an exceptional contribution on the job, within the SLA Engineering Division, or within the industry at large. Accomplishment(s) should have taken place within the calendar year immediately preceding nomination/application. However, in selected cases, based solely on the Awards Committee’s judgment, recognition may be given for ongoing, long-term contribution(s).

Instructions for submissions:
Submit the nomination/application by March 15th, 2014. Provide full name, job title, address, telephone numbers, e-mail address, and a maximum one-page statement of the nominee’s qualifications to: Diane F. Brenes, SLA-ENG Awards Committee, at the following email address: diane.f.brenes@boeing.com (714) 235-0814

$1500 Momentum Press SLA Annual Conference Grant

Momentum Press is sponsoring for SLA Engineering Division members a $1,500 grant to be used toward payment of expenses incurred while attending the SLA Annual Conference in Vancouver, B.C, Canada, June 8-10, 2014.

Criteria for entry are:
• Be a current SLA Engineering Division member actively working at an academic, government, or special library;
• Receive no financial support from employer;
• Provide an essay (300 words or less) on how attending the conference will be a benefit to you.

Post-Award Requirement:
Recipient will write a brief article (approximately 1,000 words) on the conference experience for the Dec 2014 SciTech News.

Instructions for submissions:
Submit entries for the grant by March 15th, 2014. Provide full name, job title, address, telephone numbers, e-mail address, and short essay to: Taya Cagle, SLA-ENG Awards Committee, at the following email address: taya.cagle@boeing.com (425-518-3048).
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 award will cover conference registration, lodging and airfare, up to and not exceeding US $3,000. The SLA annual conference will be held in Vancouver, B.C., Canada, June 8-10 2014.

The Awards Committee reserves the right to withhold the award if a sufficient number of appropriate candidates are not nominated.

QUALIFICATIONS:
Be a current member of SLA, preference given to members of the SLA Science-Technology and/or Engineering Division.

Candidate should reside and work outside of the United States and Canada and be working currently in a library, information center, library school or other information capacity, preferably either in the science and technology and/or engineering area.
Submission should be in English.

NOMINATIONS:
Self-nominations are encouraged. Send an online statement including information on the candidate’s professional career, professional activities or offices held, special projects or services, publications, and any other related functions that qualify the person for the award.
Documentation must include a current curriculum vita OR resume for the candidate, significant publications, supporting letters, etc.

Please inform the committee if you are currently applying for other SLA awards.

DEADLINE FOR NOMINATIONS: December 31, 2013. Nominations and all accompanying materials should be sent to Janet Hughes, Chair of the Sci-Tech Division Awards Committee, at the following email address: jah19@psu.edu

APPLICATION PROCEDURES for the SCIENCE-TECHNOLOGY and ENGINEERING DIVISIONS BONNIE HILDITCH INTERNATIONAL LIBRARIAN AWARD
1. The winner will be responsible for making all necessary travel arrangements (passports, visas, etc.) for a visit to the U.S. as well as for conference attendance.
2. Include a current resume and relevant materials as outlined in the criteria for the award.

POST AWARD REQUIREMENTS:
1. Recipient will write a brief article (approximately 1,000 words) on the conference experience for the November 2014 SciTech News.
2. Recipient will be asked to serve on the Science-Technology and Engineering Division Awards Committee the following year in order to provide for the continuity and enthusiasm of this award.

NOTIFICATION:
1. Applicants will receive notification of award status by early February 2014. The award check will be sent to the recipient as soon as the receipts are received by the Awards Chairperson.
2. The recipient’s names will be posted to the Science-Technology and Engineering Division’s Web sites.
3. The announcement and introduction of the recipient will take place at both the Science-Technology Division’s and the Engineering Division’s Annual Business Meetings/breakfasts.
E-mail nominations and materials preferred.
$1200 SPIE Digital Library Student Travel Stipend Award

SPIE Digital Library is sponsoring for library school students the award of a $1200 travel stipend toward payment of expenses incurred while attending the annual Special Libraries Association conference in Vancouver, B.C., Canada, June 8-10 2014. SPIE Digital Library is the world’s largest collection of optics and photonics applied research.

The SPIE Digital Library Student Travel Stipend Award will be given to the qualified student who submits an essay of three or less double-spaced typed pages that is judged to be the best essay submitted describing the following scenario:

When the Special Library Association (SLA) was established in 1909, the idea of “special” libraries fit the movement that was occurring, and the name of the association as the Special Libraries Association was selected in default of a better name. Since this time, the Special Libraries Association (SLA) has gone back and forth regarding the name of the association. Should the association keep the name “Special Libraries Association” or change it? Support your position with relevant and current examples. How does keeping the name versus changing the name of the association impact existing special libraries? (Special libraries include: Corporate, Medical, Law, Religious, etc.)

Qualifications for Entering Award Competition

The essay winner must be a student member of the SLA Engineering Division at the time of acceptance of the award. Part of the award will be a one-year student membership to the SLA Engineering Division.

Special Instructions
1. Give your full name, address, telephone number, email address, and a statement, on one page, of your qualifications, as given above, for entering the award competition. Include the name of your library school.
2. Type your full name (without any additional personal information) at the top of each essay page. Double space the typing on all pages.

Application Deadline for Submission: March 15th, 2014

Submit entries for the award to:

Bette Finn, SLA Engineering Division Awards Committee
Georgia Tech Library and Information Center
Georgia Institute of Technology
Atlanta, Georgia 30332-0900
Phone: (404) 894 1790 | Fax: (404) 894 8190
E mail: bette.finn@library.gatech.edu
Thanks to the Engineering Division’s Momentum Press award, I was able to attend the SLA 2013 annual conference in beautiful San Diego. I had recently graduated with my MLIS and had been working as a part time science librarian, and would not have been able to attend without it. While there I participated in pre-conference professional development sessions, attended division meetings and presentations (some standing room only), visited the Info-Expo floor, presented at Speed Geek, and enjoyed networking with newly met colleagues.

The professional development sessions I attended discussed chemistry and chemistry information resources and librarianship, and were presented by Judith Curran, Sue Cardinal, and Dawn French. I was so grateful for the opportunity to learn from these wonderfully skilled information professionals, who passed on a wealth of information in a short amount of time. These sessions were invaluable to me as a new librarian, and I can’t recommend them enough. I hope to see more of the same at future conferences.

The opening presentation by Mike Walsh was stimulating and entertaining. He impressed me with his slick visuals, and reminded me to think about the issues which have become so important to librarians, such as how to keep our technology people focused, and how to use that technology to engage with our communities.

I have to admit that it was tough to choose which of the other presentations to attend, there were so many I wanted to see. I found time to attend “Science and Technology on the Go: an Update”, presented by the Chemistry and PAM divisions. Mobile applications for the sciences were discussed, and I learned about a few of which I was previously unaware. We were also cautioned about some of the unreliable apps on the market. An analysis of student research using mobile phones was presented, as well as current perceptions by mobile users with regard to scientific research.

One of the standing room only sessions I got to see was “Next Generation Sci-Tech Librarians: Helping Institutions and Researchers Increase Their Impact”, presented by the Chemistry and Sci-Tech divisions. The emerging field of altmetrics, which uses alternative sources such as social media for assessing scholarly impact, was presented. The differences in discipline acceptance and uptake of these sources were also discussed. More traditional methods of citation analysis were covered as well. Another standing room only session was “Hard Core Tech for Librarians”, where we were shown lots of tips and tools for organizing, sharing, and visualizing information.

I did manage to squeeze in a little fun while in San Diego. I took advantage of the PAM Hospitality suite, which
provided a cozy spot to rest, refresh, and chat with other division members. Their Newcomer’s dinner was a blast also. The Info-Expo floor was overwhelming, so I appreciated the opportunity to participate in the Engineering division’s conference buddy program and walk the floor with a seasoned conference-goer. In addition to meeting the vendors and seeing their demos, we enjoyed sampling the free food and drinks. I lurked a bit at the IT Dance Party, and was impressed by the costumes (maybe next year!) The San Diego chapter hosted some fun outings, and I joined a couple of their Dine Aroun­ds and a side trip to Coronado. As a newbie, I really appreciated the effort everyone made to make all of us feel welcome.

Lastly, I participated in Speed Geek, where I demonstrated my Digital Library in a Box. This prototype of offline library of engineering resources, called EAKO (for Engineering Access to Knowledge Offline), was built for the University of Liberia with my colleagues from Rutgers. Speed Geek was well attended, and I was sorry that I didn’t have time to visit the other demonstrations.

I’m grateful to the Engineering division and Momentum Press for giving me this opportunity to learn from and connect with others in my field, and thankful to all those who put in the enormous amounts of time and effort necessary to organize and present so much useful information. I’m looking forward to learning new things, seeing familiar faces, and meeting new colleagues in Vancouver! ~Laura
I am currently a Master’s student at the Graduate School of Library and Information Science at the University of Illinois, Urbana-Champaign. My father, an electrical engineer, has always played an important role in my life. By being such an influential person in my life, he passed on his love for the engineering profession to me. For instance, while in library school, my dad and I have taken many opportunities to tour multiple hackerspaces around the US. After finishing my undergraduate degree in Mathematics and Economics, I found that engineering librarianship was an excellent way to get involved with the engineering profession. Upon acceptance to library school, I was very fortunate to receive an assistantship at the Grainger Engineering Library Information Center at the Illinois Campus. The Grainger Engineering Library Information Center is not only one of the largest engineering libraries in the nation; it also serves the academic community of the highly ranked Illinois College of Engineering. For me, this opportunity has not provided me with unprecedented experience.

Working at Grainger has given me experience directly interacting with patrons and building webpages and research resources for the engineering community. I have learned the complex system behind storage and providing engineering information materials, and also learned to differentiate between the information needs of different engineering patrons. For example, an undergraduate engineering student has very different information needs than an engineering faculty member; the student needs information for his statics exam while the faculty member needs access to an article published in *Optical Engineering*.

My assistantship experience has increased my love for engineering librarianship. I truly hope to pursue a career in engineering librarianship. I have tried to start my career off right by working on my career development by joining multiple professional society such as ACRL Science and Technology Section, ASEE Engineering Libraries Division, and soon to be SLA Engineering Division. And I have professionally networked by visiting and interning at the Terman Engineering Library at Stanford, UC-San Diego’s Biomedical Library, and the Engineering Library at the University of Washington.

Proposal
Reducing a library’s footprint will need to be a two-step process that will start by evaluating the current size of the library’s print collection to ultimately reduce it and the physical space of the library; the second step will be to embed the librarian into the company’s research teams.

The nature of an engineering company is ever-changing: it is vital to the life of the company to be one step ahead of their competitors to maintain and
increase the company’s market share. Because of this fast paced environment, it is fundamental that the company have access to the latest information and developments; whether it’s the business market or the engineering industry. Thus I propose a detailed analysis of the library’s current print collection to withdraw anything that is no longer used or needed. This analysis would allow the library to get rid of out-of-date materials and focus on staying up-to-date with latest information in the company’s market, where future acquisitions will be electronic materials rather than print materials. While the reduction of the company’s print collection will not directly save money, it will reduce the need for physical floor space which will save the operational costs of running a library and will allow the company to reallocate the space to another group.

The next step to reducing the library’s footprint would be to embed the librarian in the company’s research environment. As simply managing the library’s space and collection, the librarian’s skills are not being optimally used. The librarian has an in-depth skill set centered around finding and digesting information. I propose taking advantage of these skills by embedding the librarian into the company’s research groups. Not only will this allow the company to better use the skills of the librarian, but the librarian can gain a better understand of what the company’s information needs are. Through this understand the librarian can better allocate the library’s budget to purchase the latest relevant information relevant to the company’s information needs. This concept of embedding the librarian in the company’s research teams is not a novel idea, in fact many of the company’s competitors have implemented this idea to save money and better use the skill of the librarians; for instance, the LIS group at Qualcomm has successfully implemented this idea. [1]

Ultimately, I propose reducing the library’s footprint by breaking down the historical understanding of the library and changing it to an information center, where the physical library collection and space are reduced and the librarian becomes the information consultant for the company where research teams can rely on the librarian to provide quality information intelligence on the market and latest engineering developments.

References
News from the Aerospace Section

Aerospace Section                Mary Strife, 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.

I hope this finds you all well and perhaps getting some time off for Thanksgiving.

I am almost done as the chair of this section. The San Diego Conference was wonderful. It was great to have so many members at breakfast and the discussion about access to NASA reports was very well received.

Edna Paulson is the in-coming chair and is working on plans for the 2014 conference in Vancouver.

So, we are in need of a chair-elect for the section. This position is a great way to ease into service for the association and work with great colleagues in the Aerospace Section and Engineering Division. I am very grateful for the experience and connections I have made during my time.

If you have interest, please email me at mary.strife@mail.wvu.edu by December 5, 2013.
The Chemical Safety Board (CSB) is an independent federal agency that investigates industrial chemical accidents. As part of their mission, they create CSB Safety Videos on some of their investigations. What sets these videos apart from other industrial hygiene safety videos is the coverage of real accidents – not staged ones. The videos show what really happens when chemicals are not handled, stored, or used correctly. CSB has produced about forty safety videos that can be downloaded and viewed for free. These videos should engage the attention of anyone who works in the chemical industry.

http://www.csb.gov/videos

The University of California at Santa Barbara has produced fifteen in-house Lab Safety Videos. These well done videos focus on safety issues in academic chemistry laboratories.

http://blink.ucsd.edu/safety/research-lab/laboratory/videos.html

Although the Ithaka S+R report Supporting the Changing Research Practices of Chemists studied British chemists, most of its results and conclusions likely apply to American chemists. The report examines research habits of chemists and what kinds of support they need, including support from libraries and librarians. Academic chemists have been slow to adopt online repositories and open access publishing. They feel overwhelmed by the amount of literature available and the difficulty to keep up-to-date. They also function fairly independently from librarians and value libraries primarily for access to the journal literature.

http://www.sr.ithaka.org/research-publications/supporting-changing-research-practices-chemists

CrossRef is the organization behind the DOI (Digital Object Identifier), an invention which has quietly improved the lives of researchers, librarians, and publishers. The CrossRef database can be searched by journal title, journal title abbreviation, ISSN, or even subject. The CrossRef record for a journal provides its journal title abbreviation(s) and the years for which a DOI exists for the journal. CrossRef can also be searched with bibliographic information to find DOIs and links to specific articles but is unlikely to displace Google Scholar in this role.

http://www.crossref.org

Learn and share with other librarians what worked and what didn’t at Library Success: A Best Practices Wiki.

http://www.libsuccess.org

The Wikimedia Foundation FAQ for Librarians – Outreach Wiki addresses questions about accuracy and other issues on Wikipedia. It offers four ways that librarians can help make Wikipedia better, including teaching information literacy skills.

http://outreach.wikimedia.org/wiki/FAQ_For_Librarians
Putting time in perspective gives timelines for the past day, the life of an American’s thirty-year-old, the age of the universe and sixteen more time intervals. The timelines are a compelling way to visualize information which may appeal to many science librarians. It is from a new blog called wait but why whose eclectic entries aim to get at the bigger picture.
Sort This Pile: Content Management Lessons from the Toy Box

Nancy Flury Carlson

There is widespread recognition of the value of LEGO play to help children and young adults learn science, technology, engineering and math (STEM) concepts. Preschool children learn basic math concepts by fitting bricks together, and high school and university students study robotics, programming and other engineering techniques using the MINDSTORMS® platform. The Lego Group started its Educational Products Department in 1980 and currently provides curriculum support, associated products, and teacher resources for all levels of education. (1)

The information profession can similarly embrace LEGO play as a natural training ground for the concepts of content management and taxonomy. Anyone who has tried to organize a big pile of LEGO elements will recognize the similarities between managing a pile of bricks and managing a collection of books, reports, documents and digital media. How do you arrange them so you can get at the ones you need quickly? For LEGO, is it best to organize by color, by size, or by function? For content, is it best to organize by document type, subject matter, or title?

If you have a dozen LEGO sets at home or a few hundred books, it’s easy enough to keep the LEGO parts in a few buckets arranged by color, and the books arranged by subject on bookshelves. Sifting through the bucket or browsing the shelf for a few moments can be an enjoyable way to find what you are looking for. But the hard-core LEGO enthusiast has different needs, as does the manager of a document collection or a digital repository.

In the mid 1990s with the rise of the internet, adult fans of LEGO (AFOL) began communicating through internet discussion lists. Many of them were interested in creating their own constructions, known as MOCs (My Own Creation) rather than building LEGO sets from the original instructions. AFOLs who focus on a particular type of MOC, such as trains or spacecraft, need large numbers of specific LEGO brick styles, colors or shapes. This drove a demand for aftermarket trading in LEGO elements.

The original equipment manufacturer, The LEGO Group, launched its web site in 1996 but did not open up its online LEGO World Shop until 1999. Before that, the company sold spare parts through mail order. Now the online LEGO Shop's Pick-a-Brick store offers over 1500 specific bricks for sale, but in the mid 1990s AFOLs were on largely on their own. (2)

So what does all this have to do with content management and taxonomy? Instructions for LEGO sets are visual, not text-based, so they illustrate how to sequentially build something, but they do not name the parts. Generally the only explicit naming that comes...
with a LEGO set is the specific set name and number, possibly a theme name (Castle, Exploriens, Star Wars, etc.). AFOLs generally acquired their interest in LEGO bricks when they were children, and most had their own family- or friend-based terminology for parts. Examples: “guys” for the little people, now called “minifigs” or “mini-figures”, “flat smooth 8” for what is now called a “1x8 panel”. Early AFOLs needed to develop a shared naming convention so that they could easily trade the LEGO components. The alt. toys.lego discussion list includes numerous threads on this topic, such as an April 1993 thread called “parts list” in which several participants debated terminology and shared their personal naming conventions. (3)

In the late 1980s or early 1990s, The LEGO Group began imprinting product codes on some of its elements, providing another piece of the identification puzzle for those seeking parts. An early attempt to identify brick codes was published on alt.toys.lego in 1993 by Peter Miller; the list contained fewer than 100 different codes but was the largest list available at the time. (4) By 1997, James Jessiman had compiled a list of 6599 different part codes, with associated records including images generated by his open-source LDRAW software. (5) In 1998, a discussion list poster asked, “Does anyone know of anywhere where spare pieces can be found?” and put out a desperate plea for a “grey Engine type of piece” - there were no responses to the post. (6)

Community-based sites including the discussion list alt.toys.lego, websites Bricklink.com, Lugnet.com, Brickset.com and others emerged to help people locate older and more specialized bricks that were not easily available directly from The LEGO Group. These sites rely in part on their user communities to update inventory item descriptions, post images of parts, and list items wanted or for sale.

Bricklink.com, for example, has nearly 210 million items for sale through 7,500 online stores. The site’s catalog includes metadata for Item Type (sets, parts, minifigs, etc.), year of manufacture ranging from 1935 to present, and Category. Categories include generic part types (i.e. Brick, round) and themes (i.e. Castle). (7)

There is still no universal standard for the naming and taxonomy of LEGO elements. A 2011 post on bricks.stackexchange.com addresses the question “How are LEGO bricks categorized?” (8) Eight major classification schemes are outlined: Bricklink, Peeron, Ldraw, PartsRef, LEGO Digital Designer, Pick-a-Brick, Auczilla, and Technica. They differ according to scope, categorization levels, and approach to terminology. They also borrow naming conventions or other metadata lists from one another.

LEGO enthusiasts grapple with the same problems we face when we are managing a collection of documents, files or content. We seek existing classification schemes such as report or document numbers, metadata that already a part of the content and may already be a familiar tag for the potential users. We must identify or develop topical areas and ways to logically group and connect content items. We look for existing lists, catalogs, naming conventions and taxonomies that we can apply or adapt. And like the
hard-core AFOL who has millions of LEGO elements, we must physically or electronically organize our content in such a way that we can locate and access the thing we need quickly. Like the Bricklink Store owner, we need to ensure that our users can correctly identify the items they need from us. And like the AFOL who must acquire 25 blue gray 3x1 inverted slopes to finish his space ship, we need to to know what to search for.

The bottom line for both AFOLs and information professionals is that the best content management process is the one that meets the current need. If three people are using the same collection of LEGO bricks or content files, then a casual, on-the-fly naming and sorting system can work. But when 7,500 sellers wish to move 210 million pieces, they need a working vocabulary, a standardized hierarchy, and working software to complete transactions. Information professionals excel in bringing to life agreed hierarchies, usable naming conventions, integration of diverse metadata, catalogs and systems that deliver content effectively, and even in moderating spirited community disagreements about the right approach. Some of us even play with LEGO bricks.

References

1. LEGO® Education. http://education.lego.com
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.

**ENVIRONMENTAL SCIENCE**

GE149 9780857023605
The SAGE handbook of environmental change; 2v.
Title main entry. Ed. by John A Matthews, Patrick J. Bartlein, Keith R. Briffa, Alastair G. Dawson et al.
_Sage_, ©2012 1010 p. $440.00
This two-volume set provides an extensive overview of the interdisciplinary science of environmental change, including relatively recent issues such as climate change and other factors that have influenced the earth’s atmosphere in the past and into the future. Intended for academics, researchers, postgraduates, and practitioners in relevant fields, the book is divided into six sections. Those sections include: approaches to understanding environmental change, evidence of change and the geo-ecological response, key issues of human-induced environmental changes and their impacts, responses of people to environmental change and implications for society, and causes, mechanisms, and dynamics of environmental change. Chief editor Matthews (emeritus, physical geography, Swansea U. UK) was assisted by seven associate editors.

**PRODUCTION, INDUSTRY, LABOR**

HD45 9781119966357
Responsible innovation; managing the responsible emergence of science and innovation in society.
Title main entry. Ed. by Richard Owen, John Bessant and Maggy Heintz.
_Wiley_, ©2013 281 p. $65.00 (pa)
Having learned the lessons of the last few disastrous years, the contributors of these thirteen articles focus on democratic, equitable, and sustainable growth and innovation, call for it, and suggest methods to go back to it. They describe the increased pace of innovation in the twenty-first century. They describe the precepts behind responsible innovations, value-sense design, increased dialog and debate, and creative anticipation and describe understanding the ethical issues, adaptive governance, multilevel dynamics and soft intervention, implications in finance, and information and communication technology. The collection closes by identifying and engaging a geo-engineering vision, and discusses hype and expectations which will probably get in the way.

HD69 9781781904893
Understanding the relationship between networks and technology, creativity and innovation.
Title main entry. Ed. by Barak S. Aharonson, Uriel Stettner, Terry L. Amburgey, Shmuel Ellis and Israel Drori. (Technology, innovation, entrepreneurship and competitive strategy; v.13)
_Emerald_, ©2013 262 p. $114.95
This 13th volume of the “Technology, Innovation, Entrepreneurship and Competitive Strategy” series is devoted to research into the implications of social networks for creativity, innovation, and technology. The editors (four of the Recanati Business School, Tel Aviv U., Israel, and one of the Rotman School of Management, U. of Toronto, Canada) present eight chapters examining such topics as the coevolutionary perspective of industry-network dynamics; innovation, networks, and regions in Israel’s knowledge-intensive sectors; the evolution of research collaboration networks and their impact on firm innovation output; the role of publishing inventors in nanotechnology; the interdependencies of formal and informal network structure and the exploration of new technological opportunities among geographically dispersed firms; the impact of production and usage networks on academic citations; the costs of creating network relations and the implications for firm
performance in the case of high technology firms; and regional networks, alliance portfolio configuration, and innovation performance. Distributed in North America by Turpin Distribution.

HD9502 9783527332397
**Transition to renewable energy systems.**
Title main entry. Ed. by Detlef Stolten and Viktor Scherer.
*Wiley-VCH,* ©2013 969 p. $340.00
Researchers from both the basic sciences and application areas such as building and transport explore the technical, economics, and political dimensions of renewable energy sources. They cover renewable strategies, power production, gas production, biomass, storage, distribution, and applications. Specific topics include transition to a fully sustainable global energy system, an innovative concept for large-scale concentrating solar thermal power plants, hydrogen as an enabler for renewable energies, offshore wind power, geothermal power, the status of technologies for producing hydrogen by water electrolysis, global resources and political opportunities of biomass, pumped storage hydropower, transmission grid components, and facilitating a cost-effective evolution to a low-carbon future.

HD9665 9781907568787
**Lean biomanufacturing; creating value through innovative bioprocessing approaches.**
Smart, Nigel J. (Woodhead Publishing series in biomedicine; no.37)
*Woodhead Publishing,* ©2013 355 p. $245.00
This book tells how to create lean manufacturing systems toward the goals of reducing waste, improving efficiency, and increasing productivity—all of which have become increasingly important to pharmaceutical companies. Coverage encompasses the basics of lean and the particulars of the biomedical industry, creation and implementation of transition plans, challenging issues, simulation models, compliance issues, and ready-to-use-technologies. Smart is a UK-based biotechnology industry professional with 30 years of experience in developing and manufacturing recombinant protein monoclonal antibody and vaccine products.

HD9999 9781466644540
**Infonomics and the business of free; modern value creation for information services.**
Regazzi, John J.
*Business Science Reference,* ©2014 184 p. $175.00
This book is for professionals who are tasked with creating valuable, sustainable services around information. It explains key principles of the field of infonomics, which describes the underlying value of information and related aspects such as how information is produced and priced, the market demand for it, how user behaviors affect it, and how information is changing as an economic good and service. After a history of infonomics and the information industry, Section 2 examines new distribution channels and their effects, looking at open source and open access, digital libraries, and social networking. Section 3 concentrates on the rise of apps and the new information order, with chapters on e-learning, the wireless revolution, and privacy. Regazzi is chairman of the advisory board of the US Department of Commerce’s National Technical Information Service.

LAW

K564 9781849805025
**Research handbook on governance of the Internet.**
Title main entry. Ed. by Ian Brown.
*Edward Elgar,* ©2013 499 p. $240.00
Brown (U. of Oxford, England) presents 18 chapters that analyze various issues in Internet governance. The first nine chapters examine institutions and networks of governance and include discussions of the roots of Internet governance, ICANN and the domain name system after its issuance of the “Affirmation of Commitments,” Internet addressing, lessons for information governance from the Google Books experience, the legitimacy and accountability of the Internet’s governing institutions, network neutrality and network management regulation, policy and regulatory requirements for a future Internet, contract versus statute in Internet governance, and the contributions of technical activism to Internet governance. A second section addresses issues of human rights and fundamental freedoms on the Internet, including such specific topics as data protection; policy laundering and
modern international policy dynamics; child abuse images and content blocking systems; privacy, law, code, and social networking sites; a possible Internet bill of rights; and human rights, competition law, and access to essential technologies. The final three papers are presented under the heading of “networked control” and discuss contract, identity, and the future of Internet governance; incentives for Internet security; and network neutrality.

TECHNOLOGY

LB1028 9789462092679
The nature of technology; implications for learning and teaching.
Title main entry. Ed. by Michael P. Clough, Joanne K. Olson, and Dale S. Niederhauser. Sense Publishers, ©2013 450 p. $54.00 (pa)
Scholars of education<-->especially science and mathematics education<-->and communication explore what technology is, how and why it is developed, and how individuals and society react to it and are sometimes unwittingly changed by it, all in the context of learning, teaching, and schooling. Among the topics are the nature of technoscience, the nature of simulation technology as displayed in secondary school science teaching, technology’s tendency to undermine serious study and teaching, the convergence of Postman’s and Vygotsky’s perspectives regarding contemporary media’s impact on learning and teaching, and confusion in the classroom about the natures of science and technology and implications for scientific and technological literacy.

SCIENCE (GENERAL)

Q175 9788759317259
Philosophy of science; an introduction for future knowledge workers.
Holm, Andreas Beck. Samfunds litteratur, ©2013 255 p. $43.00 (pa)
Holm (philosophy, Aarhus U., Denmark) presents an introduction to the philosophy of science, originally written for students in business school, that focuses on classical thinkers and the philosophy of social science. Recast for knowledge workers, each chapter both introduces its subject and examines it in terms of contemporary practices. Chapters include summaries and questions for reflection or for testing one’s knowledge, and each of the three major sections end with a review of key-concepts, themes, and expanded connections to contemporary knowledge work. Part one of three parts reviews positivism, Karl Popper’s critical rationalism, and Thomas Kuhn’s theory of paradigms. Part two outlines three influential social scientific philosophies: hermeneutics, structuralism, and social constructivism. The final section explores select themes in the philosophy of social science, focusing on politics, economics, and ethics. Two appendices provide additional overviews of significant theorists and a timeline.

MATH, COMPUTERS

QA76.585 9781466639348
Data intensive storage services for cloud environments.
The 16 papers in this collection share lessons learned while developing a prototype next
generation storage cloud architecture for the European Union called VISION Cloud. Two chapters written by professors at the National Technical University of Athens, who also edited the volume, compare the most prominent commercial cloud storage services and the terms of service level agreements. Other topics include distributed components for large-scale object storage, security and regulatory compliance, business models, NAND flash memory storage, a file system for the cloud, commercial media applications, and earth observation activities.

QA76.758 9780124077683
Software engineering; architecture-driven software development.
Schmidt, Richard F.
$69.95
This work is unusual in that the author begins by challenging the notion that the field of software engineering is currently well defined and understood. He identifies two common problems, failure to understand how to develop complete software designs before coding begins and lack of consistent, scientifically verified software engineering techniques. Section 1 is a series of chapters emphasizing the need for careful initial analysis of the requirements, the need for configuration management, the importance of unit testing and reviews and audits. Also covered here is the need to create specification and documentation trees. This is also where Schmidt, chairman of the IEEE Working Group on Systems Engineering Management, takes the opportunity to attack practices like prototyping and the Agile methodology. He feels that the former wastes time and tends to end with the prototype being released as the product and that the latter ignores design issues entirely. Section two is on software engineering practices and emphasizes the need to tackle things like data security, resource needs, and preparing to deal with interfaces to other software that is external to the project. The need to identify and involve all stakeholders in the project is emphasized here. Section three is mostly on implementation issues such as identifying the needed computing environment, preparing that environment, software reviews, implementation milestones, and acceptance testing of the software among stakeholders.

QA76.758 9780769550534
Theoretical aspects of software engineering; proceedings.
International Symposium on Theoretical Aspects of Software Engineering (2013: Birmingham, United Kingdom)
$198.00 (pa)
This seventh symposium is the first in the series to be held outside of China, and is documented in this volume with 19 full and 13 short selected papers. Invited talks cover engineering multi-view models for model-driven engineering, model repair for Markov decision processes, and evolving a development environment that is suitable for constructing today’s systems. Other areas considered are model checking, verification, logic and semantics (two sessions), program analysis and testing, modeling and application, concurrency and real time, and modeling and reasoning. Only the authors are indexed.

QA76.76 9780123985361
Visual usability; principles and practices for designing digital applications.
Schlatter, Tania and Deborah Levinson.
$49.95 (pa)
Design veterans Schlatter and Levinson see a lot of digital applications that either look great or are highly functional, but not both, and contend that it does have to be that way. Drawing on heuristics and best practices from a variety of languages and disciplines, they explain how anyone involved in creating digital interfaces can define and defend a rationale for design decisions. They begin with the meta-principles consistency, hierarchy, and personality. Then they turn to the visual usability tools layout, type, color, imagery, and controls and affordances.

Morgan Kaufmann is an imprint of Elsevier.

QA76.9 9781466555952
Data mining mobile devices.
Mena, Jesus.
$69.95
Mena, who works for a Texas marketing company, explores ways to mine data in millions of people’s mobile devices, continuously and intimately broadcasting information to sell to marketers or whoever else might have use for it. He covers constructing and leveraging mobile sites, the strategic use of mobile applications, generating vital mobile data, online mobs, and
a variety of approaches and techniques for analyzing the data.

QA76.9  9781118074626
**Imbalanced learning; foundations, algorithms, and applications.**
Title main entry. Ed. by Haibo He and Yunqian Ma.
IEEE/Wiley, ©2013 210 p. $120.00
When presented with imbalanced data sets, most standard learning and mining algorithms fail to properly represent the distributive characteristics of the data, and as a result, provide unfavorable accuracies across the classes of data. Computer scientists here review recent research into imbalanced learning, the current technologies, and critical application domains. The topics include ensemble methods for class imbalance learning, class imbalance learning methods for support vector machines, class imbalance and active learning, non-stationary stream data learning with imbalanced class distribution, and assessment metrics for imbalanced learning.

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  9780124047020
**Intelligent systems for security informatics.**

Yang, Christopher and Wenji Mao, Xiaolong Zheng, Hui Wang. (Intelligent systems series)
Academic Press, ©2013 205 p. $125.00
Yang (Drexel U.), Mao, Zheng (both Chinese Academy of Sciences), and Wang (National U. of Defense Technology) survey the most active areas of research in the overlap between intelligence and security. They consider such aspects as social media forums and videos, proactive cyber defense, a high-level architecture and design of a decision engine for marine safety and security, criminal identity resolution using personal and social identity attributes, and a study of covert networks of terrorists based on an interactive relationship hypothesis. Academic Press is an imprint of Elsevier.

QA724  9783110293616
**Impulsive differential inclusions; a fixed point approach.**
Graef, John R. and Johnny Henderson, Abdelghani Ouahab. (De Gruyter series in nonlinear analysis and applications; 20)
De Gruyter, ©2013 400 p. $162.45
Mathematicians Graef (U. of Tennessee-Chattanooga), Henderson (Baylor U.), and Ouahab (Sidi-Bel-Abbes U., Algeria) explore differential equations that account for abrupt changes, such as shocks, harvesting, and natural disasters that produce short-term perturbations from continuous and smooth dynamics, but whose duration is negligible compared with the entire evolution. Such impulsive differential equations have been developed for physics, population dynamics, ecology, industrial robotics, and other fields. The topics include functional differential equations with infinite delay, boundary value problems on infinite intervals, differential inclusions, neutral differential inclusions, and the topology and geometry of solution sets.

QA279  9781118034293
**High-dimensional covariance estimation.**
Pourahmadi, Mohsen. (Wiley series in probability and statistics)
Wiley, ©2013 184 p. $89.95
For graduate students and researchers in statistics and various areas of science, engineering, economics, and finance, Mohsen (statistics, Texas A&M U.-College Station) presents some of the most important ideas and methods in high-dimensional covariance estimation. A main goal is to reduce sparse covariance estimation to that of estimating

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http://jdc.jefferson.edu/scitechnews/vols7/iss4/13
suitable regression models using penalized least squares.

**QA323 9783037191231**

**Local function spaces, heat and Navier-Stokes equations.**
Triebel, Hans. (EMS tracts in mathematics; v.20)
*European Mathematical Soc.*, ©2013 232 p. $84.00

**QA431 9783037191248**

**Invariant manifolds in discrete and continuous dynamical systems.**
Nipp, Kasper and Daniel Stoffer. (EMS tracts in mathematics; 21)
*European Mathematical Soc.*, ©2013 216 p. $78.00
Nipp and Stoffer (both mathematics, Eidgenössische Technische Hochschule, Zurich) investigate dynamical systems from a geometric perspective, focusing on invariant manifolds, which are an important tool in mechanical systems, chemical reaction dynamics, fluid mechanics, electronic circuit theory, and other applications. Among their topics are perturbation and approximation, the smoothness of the foliation with respect to the base point, invariant manifold results, invariant curves of perturbed harmonic oscillators, and blow-up in singular perturbations. Distributed in the US by the American Mathematical Society.

**QA573 9781466570979**

**Isosurfaces; geometry, topology, and algorithms.**
Wenger, Rephael.
*CRC Press*, ©2013 474 p. $89.95
Isosurfaces play a role in daily life mainly in the form of weather maps and topographical maps but the field has much greater depth.

Wenger, a computer scientist who focuses on graphics and visualization, presents a highly technical volume on the various ways to construct isosurfaces intended for those needing to visually display large, complex data sets in two, three and higher numbers of dimensions. Most of the chapters in the book concern a different approach to constructing isosurfaces: marching cubes, dual contouring, interpolation, patch construction, and meshes based on tetrahedra; multiresolution meshes and those making use of combined cubic, pyramidal, polyhedral elements are also covered. All the techniques described are backed up with formal proofs. There are appendices on the relevant geometry, topology and embeddings. Appendix D defines the special meanings of the Greek and Roman letters used in the book’s notation. There are numerous figures, most in color, to illustrate the geometrical constructions discussed.

**QA7606 9780124077416**

**High-performance deformable image registration algorithms for manycore processors.**
Shackleford, James and Nagarajan Kandasamy, Gregory Sharp.
*Morgan Kaufmann Pub., Inc.*, ©2013 114 p. $59.95 (pa)
Shackleford and Kandasamy (electrical engineering, Drexel U.) and Sharp (radiation oncology, Massachusetts General Hospital) develop highly data-parallel deformable image registration algorithms suitable for use on modern multicore processors. Their grid alignment technique and associated data structures reduce the complexity of B-spline registration and can be extended to perform multimodal image registration by utilizing the mutual information similarity metric. The last chapter describes the Plastimatch open source software suite for radiotherapy image processing. B&w images are provided but no index. Morgan Kaufmann is an imprint of Elsevier.
ASTRONOMY

QB462 9781583818329
Numerical modeling of space plasma flows; proceedings.
Astronomical Soc./Pacific, ©2013 300 p. $77.00
Scientists from different branches of the plasma simulation community explore a range of topics related to performing high-resolution simulations of physical phenomena in space physics and astrophysics. By describing the application of numerical methods and the algorithms themselves, they highlight challenges that theory imposes on numerical schemes for solving partial differential equations describing collisional and collisionless processes in space and astrophysical plasmas. The 43 papers cover turbulence and cosmic ray transport; astrophysical flows; space plasma flows; kinetic, particle, and hybrid simulations; numerical methods, algorithms, and frameworks; and data handling and visualization. Only the authors are indexed.

PHYSICS

QC20 9780819496416
Windowed fringe pattern analysis.
Kemao, Qian. SPIE, ©2013 278 p. $66.00 (pa)
Fringe pattern analysis is used to extract the hidden phase distributions that generally relate to the physical quantities being measured by imaging technologies, explains Kemao (Nanyang Technological U., Singapore). Fringe patterns can be formed coherently using various interferometers and incoherently using the moiré technique, but can also be designed in fringe projection profilometry. He looks at the challenges and solutions of such analysis, considering both theoretical analysis and algorithm development to make the book interesting to both researchers and engineers. It could also be used in a specialized course for students of optical and computer engineering.

QC176 9781118092088
Active plasmonics and tuneable plasmonic metamaterials.
Scientists and engineers in the physical sciences summarize the current, though rapidly changing, status of plasmonics and metamaterials, gathering findings and progress reports from a wide variety of sources into a one-volume reference. Among the topics are nonlinear effects in plasmonic systems, plasmonic nano-rod metamaterials as a platform for active nanophotonics, loss compensation and amplification of surface plasmon polaritons, terahertz plasmonic surfaces for sensing, and active and tunable metallic nano-slit lenses. There is no index. Co-published with Science Wise Publishing.

QC367 9780819491114
Optical imaging and aberrations part III; wavefront analysis.
Mahajan, Virendra N. SPIE, ©2013 418 p. $92.00
Having published volumes on ray geometrical optics and wave diffraction optics, Mahajan, an optical scientist with a California company, continues his series on optical imaging and aberrations by looking at wavefront analysis, an integral part of optical design, fabrication, and testing. He begins by describing optical wavefronts and their aberrations, and orthonormal polynomials and Gram-Schmidt orthonormalization. Then he walks readers through systems with a range of pupil shapes: circular, annular, Gaussian, hexagonal, elliptical, rectangular, square, and slit. Other chapters cover the use of Zernike circle polynomials for non-circular pupils, anamorphic systems, and numerical wavefront analysis.

QC661 9780123970244
Electromagnetic surface waves; a modern perspective.
Polo, John A. Jr. and Tom G. Mackay, Akhlesh Lakhtakia. (Elsevier insights) Elsevier, ©2013 293 p. $120.00
Introductory physics students learn about plane-wave solutions to the Maxwell equations. However, electromagnetic waves propagating at the boundary of two different materials can become much more complex to analyze. Polo (physics & technology, Edinboro U. of Pennsylvania), Mackay (mathematics, U.
Edinburgh, UK), and Lakhtakia (engineering science & mechanics, Pennsylvania State U.) present this niche text on electromagnetic surface waves. After a general introduction to surface waves, their taxonomy, and a general theory of surface wave propagation, chapters treat plasmon-polariton waves, Dyakonov waves, Tamm waves, and hybrid Dyakonov-Tamm waves, specifying the circumstances which generate them. The text relies heavily on advanced mathematics, and several mathematical appendices are included. There is no index.

QC793 9783527410583
Data analysis in high energy physics; a practical guide to statistical methods. Title main entry. Ed. by Olaf Behnke, Kevin Kröninger, Grégory Schott, and Thomas Schörner-Sadenius. Wiley-VCH, ©2013 419 p. $99.95 (pa) Physicists mostly in Germany, but also elsewhere in Europe and in the US, provide colleagues at any level from green student to grizzled gray-beard with practical advice on the various statistical analysis tasks typically encountered in high-energy physics, and the appropriate techniques for dealing with them. Among the topics are fundamental concepts, estimating parameters, classification, unfolding, constrained fits, how to deal with systematic uncertainties, analysis walkthroughs, and applications in astronomy.

QC793 9780124071643
Neutron and x-ray optics
Cremer, Jay Theodore, Jr. (Elsevier insights) Elsevier, ©2013 1105 p. $175.00 Cremer, with a California technology company, builds on his work on the two types of microscopy in “Advances in Imaging and Electron Physics” volumes 172, 173, and 175. Among his topics are neutron refractive index in materials and fields, the magnetic scatter of neutrons in paramagnetic materials, diffractive X-ray and neutron optics, neutron and X-ray optics in general relativity and cosmology, and neutron and charged particle magnetic optics. Print volumes in the Elsevier Insights series do not contain indexes or color illustrations.

CHEMISTRY
QD96 9780470886052
Cluster secondary ion mass spectrometry; principles and applications. Title main entry. Ed. by Christine M. Mahoney. (Wiley series on mass spectrometry) Wiley, ©2013 348 p. $115.00 Physicists and chemists in the US and Europe explain an imaging technology that has become popular for its ability to characterize surface and in-depth compositions of molecular species with minimal damage, its excellent spatial (100 nanometers or less and depth of five nanometers) resolutions, and its increased sensitivities for bioimaging applications. Among the topics are theoretical insights into cluster secondary ion mass spectrometry (cluster SIMS), surface analysis of organic materials with polyatomic primary ion sources, three-dimensional imaging with cluster ion beams, and cluster SIMS for the depth profiling of semiconductors and metals.

QD96 9781118157176
Vibrational spectroscopy at electrified interfaces.
Title main entry. Ed. by Andrzej Wieckowski, Carol Korzeniewski, and Bjöern Braunschweig. (Wiley series on electrocatalysis and electrochemistry) Wiley, ©2013 423 p. $149.95 Researchers in the physical sciences explore modern applications of Raman, infrared, and nonlinear optical spectroscopy in the study of charged interfaces. Such interfaces occur in batteries and solar cells, corrosion at solid surfaces, biochemical transformations, chemical sensors, and other contexts. Among the topics are water hydrogen bonding dynamics at charged surfaces observed with ultrafast nonlinear vibrational spectroscopy, vibrational sum frequency generation spectroscopy of interfacial dynamics, the depolarization of surface-enhanced Raman scattering photons from a small number of molecules on metal surfaces, dynamics at electrode-electrolyte interfaces using infrared spectroscopy, and vibrational spectroscopy of the ionomer-catalyst interface.
QD121 9781118065662

Trace analysis of specialty and electronic gases.
Title main entry. Ed. by William M. Geiger and Mark W. Raynor.
Wiley, ©2013 349 p. $99.95

Contributors mostly from companies but also some universities and government agencies explain techniques for analyzing small amounts of gas in various contexts. The topics include preparing samples for and conducting inductively coupled plasma-mass spectrometry analysis of gases for metals, emerging infrared laser adsorption spectroscopic techniques for gas analysis, atmospheric-pressure ionization mass spectrometry for bulk and electronic gas analysis, gas chromatographic column considerations, and gas mixtures and standards.

QD172 9780444595508

Encyclopedia of the alkaline earth compounds.
Ropp, R. C.
Elsevier, ©2013 1187 p. $449.95

Ropp (inorganic & materials chemistry, Rutgers U.) has compiled this comprehensive reference volume on alkaline-earth compounds, intended to aid researchers by reducing search-time in determining if given compounds are known to exist and providing starting points for expected properties. Chapters are systematically compiled by groups of the periodic table, with subsections for each element in the group and each alkaline-earth metal treated in order within the subsection. Phase diagrams, crystallographic parameters, solubility properties and common reactions are given for each compound. Due to the immense number of publications required to document each compound, the reference section is limited to general resources.

QD262 9783527332540

Palladium-catalyzed coupling reactions; practical aspects and future developments.
Title main entry. Ed. by Árpád Molnár.
Wiley-VCH, ©2013 511 p. $190.00

Chemists discuss important developments in palladium-catalyzed cross-coupling reactions, mostly during the past decade, and their implications for future research. Among the topics are high-turnover heterogeneous palladium catalysts in coupling reactions, using ordered porous solids as support materials in palladium-catalyzed cross-coupling reactions, coupling reactions induced by polymer-supported catalysts, cross-coupling reactions in aqueous media, the nature of the true catalytic species in carbon-carbon coupling reactions with heterogeneous palladium precatalysts, and coupling reactions in continuous-flow systems.

QD331 9783527318612

Modern nucleophilic aromatic substitution.
Terrier, François.

French organic chemist Terrier explores a class of reactions that are of fundamental importance in organic synthesis, and one of his primary research interests. He synthesizes the current understanding of nucleophilic aromatic substitution from both mechanistic and synthetic viewpoints. His perspectives are mechanistic aspects of the $S_{N}AR$ reactions, structure and reactivity of anionic sigma-complexes, the superelectrophilic dimensions in $S_{N}AR$ and related sigma-complexation processes, synthetic aspects of intermolecular $S_{N}AR$ reactions, intramolecular $S_{N}AR$ reactions, nucleophilic aromatic substitution of hydrogen, and other $S_{N}AR$ substitution pathways.

QD331 9781118148921

Transition-metal-mediated aromatic ring construction.
Title main entry. Ed. by Ken Tanaka.
Wiley, ©2013 807 p. $175.00

Chemists and materials scientists explore synthesizing aromatic compounds with aromatization reactions mediated by transition metals, as an alternative to the conventional route of substitution reactions of the aromatic nucleus. Much research into the approach has been reported over the past few years, but this is the first full volume devoted to it. It covers [2+2+2] and related cycloaddition reactions; [4+2], [3+2], and related cycloaddition reactions; electrocyclization reactions; coupling and addition reactions; and other important transformations.

QD382 9781118573808

Doping in conjugated polymers.
Kar, Pradip.
Scrivener/Wiley, ©2013 156 p. $125.00

Polymers that are intrinsically conductive are called conjugated polymers, says Kar (applied chemistry, Birla Institute of Technology, India), but they are not conductive enough to...
represent traditional semiconductors unless they are doped. He introduces student, research, and practicing chemists to the theory and practice. His topics include a classification of dopants for the conjugated polymer, the role of dopants on the conduction of conjugated polymers, some special classes of dopants for conjugated polymers, and recent and future trends of doping in conjugated polymers.

QD401  9780123852359

Pyridines; from lab to production.
Title main entry. Ed. by Eric F.V. Scriven. (Best synthetic methods)
Academic Press, ©2013  572 p.  $199.00
Editor Scriven (publishing editor, Arkivoc) presents this comprehensive reference for academics and industrialists working in the synthesis of pyridine derivatives. Strategic considerations for economizing reagents are discussed in the introduction; in particular, the question of whether to install substituents before or after cyclization is highlighted. Subsequent chapters are structured with brief commentary on each general technique followed by detailed methodological documentation for a variety of specific transformations. Topics covered include ring synthesis, substituent installation and modification, reduction to partially hydrogenated pyridines, piperidines, and quinolines, alkaloid synthesis, fluorination, and the use of pyridines as reagents. The last chapter discusses the application of flow reactors to these processes.

QD453  9781118453445

Liquid polymorphism.
Title main entry. Ed. by H. Eugene Stanley. (Advances in chemical physics; v.152)
Wiley, ©2013  634 p.  $195.00
Physicists, chemists, and related engineers review recent research findings on different forms of water and other materials within their liquid phase. Among the topics are pressure-driven liquid-liquid transformations and corresponding bizarre viscosity behavior, the water proton environment as a possible new water anomaly at the atomic scale, water and biological macromolecules, water-like thermodynamics and dynamic anomalies and the evidence for polymorphism in computer simulations of liquid silica, and a statistical mechanical approach to the thermodynamic stability of clathrate hydrates.

QD505  9781118000168

In-situ characterization of heterogeneous catalysts.
Title main entry. Ed. by José A. Rodriguez, Jonathan C. Hanson and Peter J. Chupas.
Wiley, ©2013  478 p.  $150.00
Chemists, physicists, and materials scientists describe experimental techniques that have been developed to characterize catalysts and study reaction mechanisms in situ under various conditions. Among the topics are spatially resolved X-ray absorption spectroscopy, the pair distribution function analysis of high-energy X-ray scattering data, infrared spectroscopy on powder catalysts, applying ambient-pressure X-ray photoelectron spectroscopy for the in-situ investigation of heterogeneous catalytic reaction, combining infrared spectroscopy with X-ray techniques for interrogating heterogeneous catalysts, and catalyst imaging using synchrotron-based multi-technique approaches.

QD505  9781118203538

Stereoselective organocatalysis; bond formation methodologies and activation modes.
Title main entry. Ed. by Ramon Rios Torres.
Wiley, ©2013  662 p.  $195.00
Along with metal and enzyme catalysis, catalysis using small organic molecules offers a large pool of possibilities for effecting stereoselective transformations. Torres (organic chemistry, U. Southampton, U.K.) here aims to give an overview of the field of organocatalysis, with a focus on organizing the rapid proliferation of new research that has occurred since 2000. The earlier chapters introduce the field and address catalyst properties and bond activation methods; the focus then shifts to the substrate and choosing catalysts for particular types of reactions. Several chapters are devoted to reactions forming C-C bonds, while C-O, C-N, and C-X bonds are also given a chapter each and other C-heteroatom reactions are lumped together. The last few chapters explore the hot topics of enantioselective reduction, cascade reactions forming multiple new bonds, and natural product synthesis. The book is both a historical and technical document of use to researchers and advanced students in organic chemistry.
Researchers are still seeking the Rosetta stone for how the brain evaluates complex information and makes decisions seemingly effortlessly. Quiroga (neuroscience, U. of Leicester, UK), who helped discover “concept cells” (aka “Jennifer Aniston neurons”) that play a key role in memory formation, and Panzeri (formal analysis of cortical networks, U. of Glasgow) introduce 31 chapters on methods, experimental results, and theoretical and computer modeling approaches to neural processing. International, interdisciplinary scientists provide an overview of the latest advances in neural coding. Following chapters on methodologies for the recording and analysis of the firing of single and multiple neurons, authors describe principles of neural coding across different functions and species, and models for information processing functions. The work includes a list of open-source software for studying neural codes, and supporting figures and tables.

Materials scientists and researchers in various medical and dental specialties offer a broad view of mimicking nature in developing nanoscale biomaterials and tissue engineering, from fundamental principles to current technological manifestations and trends. The topics include biomimetic polysaccharides and derivatives for regenerating cartilage tissue, bioactive polymers and nanobiomaterial composites for bone tissue engineering, nanostructured selenium as a novel biologically-inspired material for antibacterial medical device applications, emerging applications of graphene oxide and graphene in tissue engineering, and biomimetic materials for engineering stem cells and tissues.

Kagan (computer science and applied mathematics, Weizmann Institute of Science, Israel) and Ben-Gal (industrial engineering, Tel-Aviv U.) describe various problems related to the probabilistic search problem and some solutions to them. Their goal is to provide a somewhat unified understanding of how to use stochastic local search principles combined with information theory measures to address the search problem in general. They cover the problem of search for static and moving targets, models of search and decision making methods of information theory search, and applications and perspectives.

Capping a long career in electricity and electronics and in control and automation, Lamb is now an automation consultant based in Knoxville. Here he outlines automation and industrial machinery in a guidebook.
for beginners and a reference for seasoned automation professionals. His topics include automation and manufacturing, components and hardware, process systems and automated machinery, occupations and trades, and machine and system design.

T173  9780124159952
Engineered biomimicry.
Title main entry. Ed. by Akhlesh Lakhtakia and Raúl J. Martín-Palma.
Elsevier, ©2013  465 p.  $129.95
Chemical, electrical, and mechanical engineers explain the basic process of mimicking biological systems to achieve certain goals, and illustrate them with some recent examples. Among their topics are noise exploitation and adaptation in neuromorphic sensors, biomimetic robotics, surface modification for bio-compatibility, biomimetic anti-reflection surfaces, solution-based techniques for biomimetics and bio-replication, atomic layer deposition for biomimicry, and evolutionary computation and genetic programming.

T175  9783037857182
Advances in applied science, engineering and technology; select papers.
International Conference on Applied Science, Engineering and Technology (2013: Qingdao, China) Ed. by Na Na, Zonghua Wang, Qingbin Yang, Yiqian Wang, and Peilong Xu. (Advanced materials research; v.709)
Trans Tech Publications, ©2013  969 p.  $276.00 (pa)
Over 200 papers, peer reviewed and selected from submissions, cover advanced chemical engineering and technologies; material science engineering and technologies; yarn, fabric materials, and technologies; industrial, manufacturing technology, and engineering; intelligent automation and control, power, electronics, communications, and information technology applications; computational and computer science, technology, simulation, modeling, and algorithms; management science engineering, economics, logistics, and business applications; medicine and health engineering, biology technology; and environmental protection and resource development.

T339  9781466590977
Scalable innovation; a guide for inventors, entrepreneurs, and IP professionals.
Shteyn, Eugene and Max Shtein.
CRC Press, ©2013  267 p.  $49.95 (pa)
It is a given that innovation is a major component of economic growth, but few ideas survive to become products or services. This guide offers a model for the innovation process and helps innovators, inventors, entrepreneurs, and IP professionals understand the relevant opportunities and risks. Through the use of systems thinking, the authors explain how to negotiate through the variety of steps and processes required to create a successful product or service and bring it to market. Authors are Shteyn (invention and innovation, the patent paradox, the greatest innovations of Silicon Valley, and model-based invention and innovation, Stanford U.) and Shtein (quantum mechanics, solid state physics, engineering design, organic electronics, and more, U. of Michigan).

ENGINEERING (GENERAL, CIVIL)

TA157  9781118521786
Fast-tracking your career; soft skills for engineering and IT professionals.
Chou, Wushow.
IEEE/Wiley, ©2013  160 p.  $49.95 (pa)
Drawing on his “Developing Soft Skills” columns for the Institute of Electrical and Electronics Engineers (IEEE) Computer Society magazine IT Professional from 2009 to 2010, Chou (computer science, North Carolina State U.), a consultant who has been a senior manager and executive in industry, academia, and government, helps engineers, information technology professionals, and other technical professionals learn the soft skills of communication, working with people, time and career management, interviewing, dealing with bosses, motivating and delegating to staff, and formulating and implementing a vision. He illustrates these skills with examples and includes lessons he has learned, as well as failures. There is no bibliography.
Biofabrication; micro- and nano-fabrication, printing, patterning, and assemblies.
Biofabrication is a new interdisciplinary field that is largely concerned with creation, in vitro, of replacement tissues and entire organs from a patient’s own cells. Editors Forgacs, a professor of biological physics and Sun, a professor of mechanical engineering, present a compendium of essays by contributors who are a mix of academics working in biomedical, chemical or mechanical engineering and many of whom have developed novel techniques. The volume begins with an overview of the field and the various types of organs and tissues current research focuses on. There is also some discussion of both scaffold free and scaffold dependent methods for constructing new organs. Much of the rest of the book, however, focuses on techniques for creating different types of scaffolds that can serve as a basic structure into which the new organ can grow. The techniques and substrates are quite varied. For example, scaffolding can be created using micromirrors to project complex structures onto photosensitive polymers, and microscale hydrogels and polymer membranes can also function this way. Laser printing of cells suspended in a bioink is another technique for tissue creation similar to non-biological 3D printing techniques. The book also covers modular techniques wherein small chunks of tissue are constructed separately and then assembled with voids between them to accommodate vascular tissue. Biofabrication as a way to create models of cancerous tissue and its use in breast reconstruction are discussed. The final two chapters are on radical new research designed to turn bacteria into micro-robots for drug delivery and other medical tasks and interfacing microelectronics with biofabricated tissues.

Three-dimensional separated flow topology; critical points, separation lines and vortical structures.
Délery, Jean (Focus series in fluid mechanics) *ISTE/Wiley*, ©2013 155 p. $80.00
For industry sectors where aerodynamics plays a key role, this book presents the basic concepts necessary for rational description of three-dimensional flows and emphasizes reconsideration of assumptions from two-dimensional descriptions that are inappropriate and could be dangerous in three dimensions, as the author points out in his introduction. Délery is an engineer affiliated with Supaero (French National Higher School of Aeronautics and Space) and ONERA (French National Aerospace Research Center) and he has about a half century of experience under his belt. He writes clearly and concisely in this teaching text, and line drawing illustrations are included where useful.

Advances in crack growth modeling.
Title main entry. Ed. by Ferri Aliaabadi and Pihua Wen. (Key engineering materials; v.560) *Trans Tech Publications*, ©2013 180 p. $124.00 (pa)
In the field of computational fracture mechanics, three methods have come to the fore in the modeling of crack growth in complex structural parts: finite element (FEM), boundary element (BEM), and meshfree. This volume is designed to inform those working in the field of the latest research in these areas. Aliaabadi (Imperial College London) and Wen (Queen Mary, University of London) edited the invited peer reviewed papers. A keyword and author index is provided and the full text is also available online.
Fracture mechanics of electromagnetic materials; nonlinear field theory and applications.
Chen, Xiaohong and Yiu-Wing Mai. Imperial College Press, ©2013 305 p. $88.00
In the first monograph devoted to nonlinear field theory of fracture mechanics for deformable electromagnetic materials, Chen, with a US company and Mai (U. of Sydney, Australia) offer graduate students, academic researchers, and engineering specialists a sketch of the history, an overview of the current status, and a description of some recent research outcomes based on their own work. Their emphasis is on the physical interpretation of fundamental concepts, and developing theoretical models and using them to characterize fracture in the presence of magneto-electro-thermo-mechanical coupling and dissipative effects. Distributed in the US by World Scientific.

Advances in material science, mechanical engineering and manufacturing; select papers.
Scientists, engineers, students, and instructors present over 120 papers on manufacturing and mechanical engineering, equipment, design and simulation, and analyzing dynamic systems; advanced materials and material science and materials processing and machining; device design; automation and control technologies, and sensors; electrical, energy, and power systems engineering; and related themes. Among specific topics are electro-mechanical coupled characteristics of piezostack actuators under combined loads, a lubrication model and dynamic characteristics of distributed liquid film for hydrodynamic bearings, the dispersive behavior of carbon nanotubes in aqueous solution, the long-range inspection of rail breaks using ultrasonic guided wave excited by a pulse string, and the exergetic cost analysis of a marine diesel engine waste heat recovery system based on matrix model thermo-economics. A major goal of MMSE2013 was to improve China’s machinery and and materials science by cross-fertilization with the fields elsewhere.

Characterization techniques for polymer nanocomposites.
Title main entry. Ed. by Vikas Mittal. (Polymer nano-, micro- & macrocomposite series; v.3) Wiley-VCH, ©2012 360 p. $170.00
In order to help establish right practices for characterizing nanocomposite materials with any specific technique, scientists and engineers from the physical sciences survey a number of techniques for analyzing various aspects of polymer nanocomposites. The topics include thermal characterization, flame-retardancy, following nanocomposite synthesis by Raman spectroscopy and X-ray photoelectron spectroscopy, dielectric relaxation spectroscopy for polymer nanocomposites, characterizing polymer nanocomposite colloids by sedimentation analysis, and biodegradability.

Environmentally friendly polymer nanocomposites; types, processing and properties.
Environmentally friendly polymeric materials are not exactly new, says physical chemist Ray (National Centre for Nano-Structured Materials, Pretoria, South Africa), but in recent years considerable research has been devoted to developing such polymers with properties suitable for a range of specific applications. He explores polymer composites in which the reinforcing filler has nanometer-scale dimensions. Among his topics are environmentally friendly polymer matrices for composites, techniques for characterizing structure and properties, polymer matrices from renewable sources and from fossil fuel sources, and processing. Then he focuses on polymer nanocomposites that use clay/carbon nanotube reinforcements, and considers their tensile properties, dynamical mechanical properties, thermal stability, barrier properties, crystallization behavior, kinetics, and morphology; biodegradation behavior; and rheological properties.
Micromechanics of composites; multipole expansion approach.
Kushch, Volodymyr I.  
_Butterworth-Heinemann_, ©2013  489 p.  $169.95
Kushch (National Academy of Sciences of Ukraine) presents the multipole expansion method as an alternative to computational micromechanics for analyzing heterogeneous materials on the level of individual constituents. Being mostly analytical in nature, he says, it constitutes a theoretical basis for high-performance computational algorithms and has found applications in astronomy, physics, chemistry, engineering, statistics, and other fields. He describes the theory and technique of the method in detail, and applies it to selected actual problems in micromechanics. Covering first particulate composites then two-dimensional models of fibrous composites, he considers such topics as potential fields of interacting spherical inclusions, the conductivity of a solid with spheroidal inclusions, circular fiber composite with perfect interfaces, and fibrous composites with anisotropic constituents. Sample FORTRAN codes are appended.

Clay-containing polymer nanocomposites; from fundamentals to real applications.
Ray, Suprakas Sinha.  
_Elsevier_, ©2013  395 p.  $199.95
A specialist in polymer nanocomposite materials, Ray (King Abdulaziz U., Saudi Arabia) highlights recent developments in these hybrid organic-inorganic systems in which clay nanoparticles are dispersed in polymer matrices to create properties that cannot be achieved with components at larger sizes. His topics include an overview of pure and organically modified clays, techniques for characterizing structure and morphology, mechanical properties, thermal stability, melt-state rheology, and real and potential application.

Advances in modeling and design of adhesively bonded systems.
Title main entry. Ed. by S. Kumar and K.L. Mittal. (Adhesion and adhesives; fundamental and applied aspects)  
_Scribner/Wiley_, ©2013  260 p.  $195.00
Nine extensive articles by mechanical and structural engineers describe recent developments in theoretical and computational modeling and the design and experimental aspects of adhesively bonded structural systems, which are used in a wide range of fields. The topics include stress and strain analysis of symmetric composite single lap joints under combined tension and in-plane shear loading, modeling cylindrical joints with a functionally graded adhesive interlayer, testing dual adhesive ceramic-metal joints for aerospace applications, modeling composite sandwich T-joints under tension and bending, and detecting interface failure in adhesively bonded composite joints using a novel vibration-based approach. There is no index.

Advanced structural damage detection; from theory to engineering applications.
Stepinski, Tadeusz and Tadeusz Uhl, Wieslaw Staszewski.  
_Wiley_, ©2013  328 p.  $149.95
Structural health monitoring (SHM) in engineering refers to methods for assessing and monitoring structures with techniques such as remote sensing and smart materials. This reference for researchers, engineers, and grad students in mechanical and civil engineering explains the underlying theory of SHM and details the latest and how they can be used in damage detection for different types of structures. Coverage encompasses numerical simulation of elastic wave propagation, nonlinear acoustics, piezocomposite transducers for guided waves, beamforming, vibrothermography, and vision-based monitoring systems. The book includes case studies, data processing algorithms, and real prototypes. The editors are affiliated with AGH University of Science and Technology.

Tensile fabric structures; design, analysis, and construction.
Title main entry. Ed. by Craig G. Huntington.  
_Am. Society of Civil Engineers_, ©2013  175 p.  $90.00 (pa)
Members of the ASCE task committee on tensioned fabric structures describe the properties of the fabrics and films commonly used for architectural membrane structures, the different types of loads and their effects, shape determination, analysis of applied loads, the connections between the various materials, and attachment to the supporting structure. B&w photographs and a glossary are provided. This volume updates the earlier

TA681  9780857090454
Understanding the tensile properties of concrete.
Title main entry. Ed. by Jaap Weerheijm. (Woodhead Publishing series in civil and structural engineering; no. 48)
Woodhead Publishing, ©2013 378 p. $255.00
Engineers almost exclusively from Europe who specialize in concrete summarize the current understanding of the behavior of the material under tensile loading, with a special emphasis on dynamics. Structural uses of concrete generally take advantage of its compression strength, but its tensile strength, which is much less, must be taken into account as well. Looking in turn at static and dynamic tensile loading, they discuss such aspects as factors affecting the tensile properties of concrete, modeling moisture transport in intact and fractured concrete, dynamic test devices for analyzing the tensile properties of concrete, response mechanisms of concrete under impulsive tensile loading, modeling the response of concrete structures from strain rate effects to shock induced loading, and practical examples of understanding the dynamic response of concrete to loading.

TA1522  9781608075317
Finite element modeling methods for photonics.
Rahman, B.M. Azizur and Arti Agrawal. (Artech House applied photonics series)
Artech House, ©2013 247 p. $159.00
Professors at City University London introduce the finite element method as a tool for simulating the behavior of electromagnetic fields in a photonic device, and explain the different forms of finite element-based methods that are widely used in the photonics field. Written for laser and fiber optic engineers, the book models several styles of waveguides, applies the finite element beam propagation and finite element time domain methods to photonic structures, and discusses how physical effects can be modeled into the finite element method.

TA1540  9781439827994
Ultra-realistic imaging; advanced techniques in analogue and digital colour holography.
Bjelkhagen, Hans and David Brotherton-Ratcliffe.
CRC Press, ©2013 638 p. $169.95
Digital techniques have enabled the creation of high virtual volume holographic displays. Bjelkhagen (emeritus, interferential imaging sciences, Glyndwr U., North Wales, UK) and Brotherton-Ratcliffe (PhD, founder, Geola laser physics and holography organization, UK) present a condensation of their knowledge and experience in the area of display holography rather than an introduction to the subject. After defining 'ultra-realistic imaging,' they discuss its origins in display holography; techniques including Lippmann photography, continuous wave lasers, pulsed lasers; digital printing techniques for holograms; approaches for diffraction efficiency; the theoretical basis, recent developments, and applications. The volume includes some 500 color photographs, design schematics, and supporting equations for the recording and production of ultra-realistic holographic images. Appendices add historical background on display holography and the Geola organization, and code for the MAXScript virtual scripting language.

ENVIRONMENTAL TECHNOLOGY

TD899  9780857096821
Handbook of recycled concrete and demolition waste.
Title main entry. Ed. by F. Pacheco-Torgal, V.W.Y. Tam, J.A. Labrincha, Y. Ding, and J. de Brito. (Woodhead Publishing series in civil and structural engineering; no. 47)
Woodhead Publishing, ©2013 646 p. $300.00
The European Union has set a target of recycling 70% of the waste concrete from construction and demolition by 2020, and the studies here contribute to the development of new binders that can better integrate recycled concrete into new uses, and new techniques for remediating or immobilizing hazardous wastes such as asbestos that might be present. Researchers in construction and civil engineering cover managing construction and demolition waste, processing and properties of recycled aggregates from construction and demolition waste, applications of recycled aggregates, and environmental issues.
MECHANICAL ENGINEERING & MACHINERY

TJ151 9783037857793
Advanced research on mechanical engineering, industry and manufacturing engineering III; select papers.

MEIME2013 is documented by 130 papers on mechanical engineering and mechanics and control technologies in manufacturing and industry; material engineering and processing, applied mechanics, and theoretical computer methods in materials; industrial technologies and applications; and manufacturing engineering and manufacture automation. Specific topics include anti-surge control of the gas booster in the thermal power plant with gas-fired boiler, applying micro-scale gas lead detection technology on a small pressure vessel, residual stress of engineering ceramic grinding surface, a hybrid ant-colony optimization algorithm for permutation flow-shop scheduling in manufacturing systems and industrial processes, and identifying a toolholder-spindle joint based on receptance coupling substructure analysis.

TJ163 9781466517851
Water & wastewater infrastructure; energy efficiency and sustainability.
Spellman, Frank R.
CRC Press, ©2013 443 p. $129.95

It was Spellman who famously documented the ancient water distribution system at Machu Pichu in Peru. After a safety and health career in a water utility and an environmental health career in academia, here he alerts professionals and students in the water and wastewater fields to the urgent need to begin reducing the amount of energy it takes to deliver potable water and treat wastewater. Improving energy and water efficiency can free up money to deal with other problems utilities are facing, he says, such as aging infrastructure, rising costs, increasing regulations, growing demand, and a changing workforce. After reviewing the basics, he discusses energy-efficient equipment, technology, and operating strategies; energy-efficient technology; biomass power and heat generation; and sustainability using renewable energy.

TJ211 9781466642256
Engineering creative design in robotics and mechatronics.

Mechanical and other engineers, physicists, mathematicians, and other contributors look at the current state of creative design in robotics and mechatronics. The topics include design for information processing in living neuronal networks, the efficient evolution of modular robot control through genetic programming, inferring intention through state representation in cooperative human-robot environments, developing and simulating an adaptive control system for the teleoperation of medical robots, time delay and uncertainty compensation in bilateral telerobotic systems, and cyberinfra product concept and its prototyping strategies.

ELECTRICAL ENGINEERING, ELECTRONICS, NUCLEAR ENGINEERING

TK145 9781845647988
Electromagnetics engineering handbook; analysis and design of electrical and electronic devices and systems.
Hoole, P.R.P. and K. Pirapaharan, S.R.H. Hoole.
WIT Press, ©2013 414 p. $372.00

Electrical engineers P.R.P Hoole (U. of Malaya), Pirapaharan (Taylor’s U. Malaysia), and S.R.H. Hoole (Michigan State U.) presents a reference on electromagnetic engineering for undergraduate students, instructors and researchers, and design and consulting engineers. In many branches of electrical and electronics engineering, they say, getting back to fundamental principles is crucial to designing customer-friendly technology and systems. They cover vector analysis; static and dynamic fields and Maxwell’s equations; electromagnetic waves; computer-aided design; transmission lines and waveguides; electromagnetic radiation, interference, and noise in antennas; the influence of pair reactions on biological rhythms; and radio frequency electromagnetic fields from mobile phones. The US office of WIT Press is Computational Mechanics.

http://jdc.jefferson.edu/scitechnews/vol67/iss4/13
TK2781 9781118331521
AC electric motors control; advanced design techniques and applications.  
Title main entry. Ed. by Fouad Giri.  
Wiley, ®2013 555 p. $145.00  
Electrical and other engineers survey the wide variety of control problems posed by alternative-current motors and corresponding control methods for design, analysis, and implementation in many cases methods they themselves have created. They pay special attention to sensorless nonlinear observers, adaptive and robust nonlinear controllers, output-feedback controllers, algorithms to detect and isolate faults, and fault-tolerant controllers. The topics include control models for synchronous machines, high-gain observers in the robust feedback control of induction motors, the experimental evaluation of nonlinear control design techniques for sensorless induction motors, the adaptive output-feedback control of permanent-magnet synchronous motors, the nonlinear state-feedback control of three-phase wound rotor synchronous motors, and applying induction motor control in high-speed train electric drives.

TK3105 9781597499989
Applied cyber security and the smart grid; implementing security controls into the modern power infrastructure.  
Knapp, Eric D. and Raj Samani.  
Syngress Media, Inc., ©2013 202 p. $59.95 (pa)  
Computer security professionals Knapp and Samani warn that the smart electrical grid now being planned and designed will be vulnerable to attack. They cover the defining the smart grid, architectural details, attack vectors, privacy concerns, security models, securing the smart grid, securing the supply chain, and the future of smart grid cyber security.  
Syngress Media is an imprint of Elsevier.

TK5102 9780124095014
Applications of random process excursion analysis.  
Brainina, Irina S. Trans. by Dmitri Arch. (Elsevier insights)  
Elsevier, ©2013 233 p. $150.00  
Brainina (Povolzhye State U. of Telecommunication and Informatics, Russia) shares the results of her many years studying the theory of excursions as it applies to adaptive radio communications systems. A highlight is that she manages to apply calculation methods chosen for Gaussian processes to a larger class of non-Gaussian random processes. The formulae she obtained—both the precise and the approximate—are rather simple, she says, and can be applied in many fields where signals must be recognized against background noise. Among her topics are probability characteristics of random processes, estimating distribution densities of excursion durations for random stationary broadband signals, using a family of correlation functions of a clipped random process to increase the accuracy of level-crossing parameter estimation, and a methodology for designing adaptable analyzers used to measure the parameters of excursions in stationary random processes. Print volumes in the Elsevier Insights series do not contain indexes or color illustrations.
Evolution of cognitive networks and self-adaptive communication systems.
For students, researchers, and professionals, Lagkas (computer science, U. of Western Macedonia, Greece, and U. of Sheffield, UK), Sarigiannidis, Louta, and Chatzimisios present 14 chapters by computer science, telecommunications, engineering, information technology, and other researchers from Europe, Pakistan, Singapore, the US, and Brazil, who describe the field of cognitive networking and the technologies that are combined to form self-aware, self-adaptive, and self-organizing networks. They address cognitive networking issues that are related to the physical layer of the network architecture, reviewing cooperative communication technologies and techniques for disseminating data and selecting channels in cognitive radio networks; resource management, focusing on TV white spaces and QoS requirements; power control issues in modern mobile networks and how regulations affect business aspects related to cognitive radio; and experimental results related to distributed data dissemination. The second section covers issues related to cognitive networking layers that are higher than the physical layer, discussing technologies for autonomous software networks; QoS support provision in multiple layers of cognitive radio networks; the suitability of TCP in dynamic access networks; the convergence of optical and wireless networks; developments in self-adaptive networks; simulation results related to security issues in cognitive networks; and an application of cognitive technologies for e-learning in broadband networks.

Service-driven approaches to architecture and enterprise integration.
Title main entry. Ed. by Raja Ramanathan and Kirtana Raja. (Advances in systems analysis, software engineering, and high performance computing) Information Science Reference, ©2013 383 p. $195.00
Computer and information scientists explore challenges of service-driven architectural approaches, implementation techniques, and best-practice recommendations for designing and implementing business software for fast-paced companies. Among the topics are principles and methodology of service-driven approaches to software architecture, a design model for mediating message heterogeneity in service compositions, a policy-driven framework for maintaining transactional integrity in long-running workflow services, architectural practices for improving fault tolerance in a service-driven environment, tools and techniques for governing the service-driven environment, enterprise mobile service architecture, and extending service-driven architectural approaches to the Cloud.

Polarimetric scattering and SAR information retrieval.
Jin, Ya-Qiu and Feng Xu. IEEE/Wiley, ©2013 397 p. $140.00
Jin (Fudan U., China) and Xu, with a US artificial intelligence company, examines some recent research into both theoretical and numerical aspects of retrieving information through polarimetric imagery of synthetic aperture radar (SAR). Their topics include vector radiative transfer, mapping and projection algorithms for imaging simulation of polarimetric SAR, inversions from polarimetric SAR images, Faraday rotation on polarimetric SAR images at ultra-high and very-high frequency bands, detecting change from multi-temporal SAR images, and reconstructing a
three-dimensional target using downward-looking step-frequency radar.

TK7871 9781608075157
Handbook of reflector antennas and feed systems, v.1: Theory and design of reflectors.
Title main entry. Ed. by Satish K. Sharma, Sudhakar Rao, and Lotfollah Shafai. (Artech House antennas and propagation series )
Artech House, ©2013 309 p. $189.00
This is the first volume of a three-volume reference for antenna engineers and researchers. (The second volume is on feed systems; the third, on applications of reflectors.) Editors Sudhakar Rao (Northrup Grumman Aerospace Systems), Satish K. Sharma (San Diego State U.), and Lotfollah Shafai (U. of Manitoba, Canada) have organized material to cover numerical techniques, design and performance characteristics of classical reflector antennas, adaptive apertures, reflector shaping, bifocal and biconvicted dual reflector antennas, advanced antennas, and reflectarray antennas.

TK7871 9781608075171
Handbook of reflector antennas and feed systems, v.2: Feed systems.
Title main entry. Ed. by Sudhakar Rao, Satish K. Sharma, and Lotfollah Shafai. (Artech House antennas and propagation series)
Artech House, ©2013 367 p. $219.00
This is the second volume of three that comprise a handbook intended as a comprehensive resource for practicing antenna engineers and researchers. (The first volume is devoted to the theory and design of reflectors; the third, to applications of reflectors.) After an introduction, coverage encompasses computational EM methods, electrically small feeds, smooth wall multimode horns, profiled horns and feeds, soft and hard horn antennas, circularly polarized feed antennas, generalized asymmetric reflector antenna feeds for polarization control, and array antennas and low-gain TT&C antennas. The three editors are affiliated as follows: Sudhakar Rao (Northrup Grumman Aerospace Systems), Satish K. Sharma (San Diego Aerospace Systems), and Lotfollah Shafai (U. of Manitoba, Canada).

TK7876 9780470125342
Digital microwave communication; engineering point-to-point microwave systems.
Kizer, George.
IEEE/Wiley, ©2013 736 p. $139.95
A Texas-based telecommunications consultant specializing in microwave radio engineering and training, Kizer compiles the detailed technical information on designing fixed point-to-point microwave communication systems that he wished he had when he started out as a microwave transmission engineer. His topics include the regulation of microwave radio transmission, radio network performance objectives, designing and operating microwave systems, theoretical reference circuits, microwave radio diversity, ducting and obstruction fading, digital receiver interference, and path performance calculations. A bank of appendices provides technical data.

TK7882 9781439883242
Effective surveillance for homeland security; balancing technology and social issues.
Title main entry. Ed. by Francesco Flammini, Roberto Setola, and Giorgio Franceschetti. (Multimedia computing, communication and intelligence)
CRC Press, ©2013 616 p. $119.95
This is a technical book on surveillance technologies that also incorporates consideration of social and legal issues in its opening chapters, which discuss the modeling of trust in global networks, perceptions of terrorism in Germany and its consequences for the acceptance of security and surveillance measures, a scheme for preserving privacy information in video surveillance systems that utilizes encrypted biometric signals, and assessments of the privacy protection afforded by layer scrambling techniques in video surveillance systems. A second group of chapters focuses more specifically on advanced technologies for physical and cyber surveillance, including recognition and representation of temporal, causal, and spatial events in multimedia surveillance systems; the challenges of designing a sensor-based intelligent systems management framework for surveillance systems; behavior detection and prediction and situational awareness methodologies from fusing multiple data sources; ergonomic and human-related factors in surveillance system design; web application
vulnerability awareness, assessment, and reduction; detecting different attacks in SCADA network systems; and modeling and countering virus diffusion in sensor networks for net-centric surveillance systems. The final set of chapters discusses homeland security applications, including geographic information processing and geographic intelligence technologies for disaster mitigation, human intrusion detection using computer vision, wireless sensor networks and audio signal recognition for homeland security, dynamic Bayesian multitarget tracking for behavior and interaction detection, imaging tunnels and underground facilities using radio-frequency tomography, a framework for ubiquitous monitoring of intermodal cargo containers, and model-based control of building evacuation using feedback from sensor and actuator wireless networks.

TK7895 9780123850850

Model-based engineering for complex electronic systems.
Wilson, Peter and H. Alan Mantooth. Newnes, ©2013 513 p. $89.95

Wilson (electronic and electrical engineering, U. of Southampton) and Mantooth (electrical engineering, U. of Arkansas) provide a desktop reference for engineers, students, and researchers who intend to carry out model-based electronic engineering. It can also be used for an upper-level undergraduate or entry-level graduate courses introducing model-base engineering. Their topics include the design and verification process, block diagram modeling and system analysis, multiple domain modeling, statistical and stochastic modeling, design flow, and a complex electronic system design example.

MINING ENGINEERING

TN689 9781627080057

Advanced high-strength steels; science, technology, and applications.
Demeri, Mahmoud Y. ASM International, ©2013 301 p. $159.00

Demeri (mechanical engineering, Lawrence Technological U., Michigan) presents a guide to the grades, types, microstructures, thermal processing, deformation mechanics, properties, performance, and applications of advanced high-strength steels (AHSS). He also explains the reasons and solutions for building lighter, safer, and more efficient and affordable automobiles; the rationale for using AHSS to accomplish weight reduction, fuel economy, crash safety, cost savings, and greenhouse gas reduction; the relationships between composition, processing, microstructure, and mechanical properties; and design guidelines, manufacturing hurdles, advanced forming, sustainability, and evolving grades of AHSS.
His goal is to provide a comprehensive reference for students, researchers, engineers, technicians, regulators, and anyone else concerned with the material.

**CHEMICAL TECHNOLOGY**

TP155 9781118341667

**Multi-objective optimization in chemical engineering; developments and applications.**


Chemical engineers who have researched optimization techniques for more than one objective describe new techniques and new applications in chemical engineering, some of them not covered in previous books on multi-objective optimization. Among the topics are the performance comparison of jumping gene adaptations of an elitist non-dominated sorting genetic algorithm, a robust multi-objective genetic algorithm with online approximation under interval uncertainty, chance constrained programming to handle uncertainty in nonlinear process models, the ecodesign of chemical processes with multi-objective genetic algorithms, and the multi-objective optimization of a hybrid steam stripper-membrane process for the continuous purification of bioethanol.

TP155 9781118155424

**Sustainable catalysis; challenges and practices for the pharmaceutical and fine chemical industries.**


Efforts to make pharmaceutical processes less environmentally harmful have led to robust catalytic processes being developed that are increasingly beginning to make an impact. Chemists describe examples that are particularly important in the fine chemical and pharmaceutical industries, including carbon bonds with hydrogen, nitrogen, and other carbon; and chemical, biological, and organic approaches. Among the topics are synthesizing chiral amines using transaminases, developing a sitagliptic transaminase, olefin metathesis from academic concepts to commercial catalysts, the discovery of a new palladium/copper catalytic system for carbon-hydrogen arylation and its applications in a pharmaceutical process, and catalytic variants of phosphine oxide-mediated organic transformations.

TP245 9780080977447

**Novel carbon adsorbents.**


The adsorption of carbon is not the issue, but the use of carbon-based materials to adsorb other substances. Chemists and materials scientists cover recent developments in theory, new characterization methodologies, adsorption by novel carbon types, and emerging applications. Among the topics are the accessibility of gases and liquids in carbons, characterizing advanced physical adsorption by nanoporous carbons, hydrophobicity and hydrophilicity in carbons, adsorption by phosphorous-containing carbons, unique characteristics and applications of zeolite-tempered carbon, adsorption by soft-templated carbons, adsorption behaviors of graphene and graphene-related materials, the catalytic removal of water-solved aromatic compounds by carbon-based materials, carbon-based catalyst support in fuel cell applications, and novel carbon materials for adsorbing carbon dioxide.

TP339 9780444563309

**The role of catalysis for the sustainable production of bio-fuels and bio-chemicals.**


Catalysis, long used for the production of bulk and fine chemicals in petroleum-derived organic synthesis, also has the potential to speed turnover of processes involving biological materials. In this reference for academic and industrial researchers, editors Triantafyllidis (chemistry, Aristotle U. of Thessaloniki, Greece), Lappas (chemical processes & energy resources, Center for Research and Technology, Greece), and Stöcker (materials & chemistry, SINTEF, Norway) explore the applications of catalysis to “green chemistry” processes for the production of sustainable biofuels and bio-chemicals. The primary focus is on lignocellulosic biomass feeds, however, vegetable oil-to-fuel conversion and biodiesel production are also discussed. Processes of refinement, pyrolysis, pretreatment, acid...
catalysis, depolymerization, hydrotreatment, enzyme catalysis, steam reforming, metabolic engineering, and photocatalytic hydrogen production are covered. Connections are made where appropriate to common organic synthesis methods, such as heterogeneous catalysis and utilization of syngas.

TP339 9780415620888
Technologies for converting biomass to useful energy; combustion, gasification, pyrolysis, torrefaction and fermentation.
Title main entry. Ed. by Erik Dahlquist.
(Sustainable energy developments; v.4)
CRC Press, ©2013 504 p. $129.95
Fossil fuels as an energy source are increasingly recognized as posing problems of both scarcity and environmental damage. However, biological systems—already adept at capturing the continuous influx of solar energy at the planet’s surface—naturally recycle materials on a timescale compatible with human energy needs. This dense book, edited by Dahlquist (energy technology, Malardalen U.) but with a long list of contributors, catalogs the variety of ways in which biomass can be efficiently used as a renewable energy source. Topics include combustion of waste materials, gasification, ethanol production, carbon capture and storage, torrefaction and pyrolysis, anaerobic degradation, and process optimization. The book is highly technical, with many diagrams, graphs, and equations explaining the various methods.

TP1170 9781118331545
Product and systems development; a value approach.
Weiss, Stanley I.
Wiley, ©2013 259 p. $95.00
Mechanical engineer Weiss (Stanford U.) identifies and describes processes, practices, and tools for developing products and systems, emphasizing value-contributing practices and tools that can lead to satisfying not only customers and users but also other stakeholders whose values derive from many disparate environments. His topics include a preview of best practices, the role of systems engineering, value-driven requirements development, concept selection and trades, failure modes and fault tolerance, risk analysis, integrated product and process development, cost estimating, value stream mapping and process summary and tools.

Manufacutes, Arts & Crafts

TS170 9781118331545
Handbook of laser welding technologies.
Title main entry. Ed. by Seiji Katayama.
(Woodhead Publishing series in electronic and optical materials; no.41)
Woodhead Publishing, ©2013 632 p. $325.00
For students, engineers, scientists, and instructors concerned with laser welding, specialists describe various laser or hybrid welding processes; the welding of various kinds of materials; and metallurgical, chemical, and mechanical aspects. They consider such topics as developments in carbon dioxide laser welding, conduction laser welding, laser welding glass, beam scanning (remote) technologies and smart beam processing, multi-pass laser welding with filler wire, and applications of laser welding in the railway and shipbuilding industries.

TS695 9781118062777
Atomic layer deposition; principles, characteristics, and nanotechnology applications, 2d ed.
Kääriäinen, Tommi, and David Cameron, Marja-Leena Kääriäinen, Arthur Sherman.
Scrivener/Wiley, ©2013 253 p. $195.00
The ability to deposit layers of material only a few nanometers thick on a surface is known as
atomic layer deposition (ALD). It has become vitally important in the semiconductor and nanotechnology industry. All methods covered in this book by authors Tommi Kääriäinen, David Cameron, Marja-Leena Kääriäinen, and Arthur Sherman, all with extensive experience in ALD (atomic layer deposition), rely on the exposure of a substrate in near vacuum to a diffuse gas of the substance to be deposited. Usually the goal is to deposit many layers on top of each other. There are many variations on this process. The book is broken down by material to be deposited as a monolayer. There is a chapter on semiconductor films such as gallium arsenide and precursors used to facilitate deposition. Oxide films are covered in detail in the next chapter. Titanium, Zirconium, and Hafnium dioxide films are discussed as are zinc, tin, indium, and tantalum oxide. A chapter each is devoted to Nitride and metal films and the deposition of many different metals and nitrides is covered. Deposition of organics and hybrid organic-inorganics is given a chapter. The final chapter covers applications of ALD such as micro electromechanical and nanoelectromechanical (MEMS/ NEMS) systems, optical applications, and nanoparticles. There are abundant b&w graphs and figures to illustrate the techniques covered.

**MILITARY & NAVAL SCIENCE**

U22 9780415539340  
**Routledge handbook of ethics and war; just war theory in the 21st century.**  
Title main entry. Ed. by Fritz Allhoff, Nicholas G. Evans and Adam Henschke.  
*Routledge*, ©2013 418 p. $205.00  
Deliberately diverse (conflicting and contrasting points of view), dealing with the issues of theory and practice, this collection comprises 29 contributions. The three editors are philosophers affiliated with Charles Stuart U., Australia; Allhoff is also at Western Michigan U. The roster of contributors is impressive, including a retired Brigadier General (USA) who is a trial attorney and a professor involved with human rights and security issues; a computer scientist who models deception, information security, and surveillance systems; and scholars of public policy and political science as well as theology and philosophy. Discussion encompasses theories of war--revising the just war tradition; irregular wars, terrorism and counterterrorism, and warfighters and moral agency; and technologies of war and the future of fighting.

**PUBLISHING, LIBRARY SCIENCE, BIBLIOGRAPHY**

Z669 9780838986486  
**Handbook of academic writing for librarians.**  
Hollister, Christopher V.  
*Am. Library Association*, ©2013 248 p. $56.00 (pa)  
Although this handbook certainly provides tips on writing well for an academic librarian audience, it has the much larger goal of guiding the current (or future) librarian through the whole publishing process. A chapter on selecting the right journal to submit one’s article to, for instance, covers important things to be aware of, such as how the journal rates for impact factor, Eigenfactor, or H-index. To further aid the reader, Hollister (University at Buffalo) adds an appendix to one chapter showing the review guidelines used by *Communications in Information Literacy (CIL)*, a journal for which he serves on the editorial board.

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