graduate students, for engineers new to the field, for engineers in neighboring fields, and for specialists in other spacecraft subsystems. Among the topics are space environment, thermal radiation heat transfer, phase change capacitors, thermoelectric cooling, and thermal mathematical models.

TL1500 57-43769 978-0-87703-581-7

Spaceflight mechanics 2012; proceedings; 3v. (CD-ROM included)

AAS/AIAA Space Flight Mechanics Meeting (22d: 2012: Charleston, South Carolina) Ed. by James V. McAdams et al. (Advances in the astronautical sciences; v.143)

Am. Astronautical Society, ©2012 2612 p. $330.00

Students, engineers, scientists and mathematicians representing government agencies, military services, commerce, and academia from the US and abroad participated in the conference. Over 150 papers appear in the proceedings, though the plenary lecture is represented only by an abstract. The areas covered include space situation awareness, determining attitude, formation flying, optimal control, flight dynamics operations, dynamical systems theory, lunar and planetary missions, asteroid and near-earth object missions, optimizing trajectory, attitude dynamics and control, orbital debris, and determining orbit. The three volumes are paged sequentially; only article number and authors are indexed, but the number index on the accompanying disk is searchable for terms in titles. Published by Univelt for the American Astronautical Society. The spine reads" Advances in the Astronautical Sciences."

MINING ENGINEERING

TN690 978-3-03785-390-0

Recrystallization and grain growth; proceedings.

International Conference on Recrystallization and Grain Growth (4th: 2010: Sheffield, UK) Ed. by E.J. Palmiere and B.P. Wynne. (Materials science forum; vs.715-716)

Trans Tech Publications, ©2012 1011 p. $414.00 (pa)

Recrystallization and grain growth are fundamental to microstructure evolution during the annealing and thermomechanical processing of engineering materials, so of great importance in a wide range of fields. Approximately 175 papers consider such aspects as microstructure and texture evolution in metals and alloys during intense plastic deformation, a first approach toward a proper generalized decomposition-based time parallelization, modeling discontinuous dynamic recrystallization using a physically-based model for nucleation, controlling grain size in oxide ceramics for optimizing strength and wear resistance, and the effect of initial grain sizes on strain-induced boundary migration.

TN690 2011-014030 978-1-119-99305-6

Solidification and crystallization processing in metals and alloys.

Fredriksson, Hasse and Ulla Åkerlind.

John Wiley & Sons, ©2012 816 p. $140.00

Fredriksson (Royal Institute of Technology, Sweden) and Åkerlind (U. of Stockholm) complete their three-volume set, which also includes *Materials Processing during Casting* (2006) and *Physics of Functional Materials* (2008). They present a deeper interpretation of processes they treated in the first volume—at a graduate level rather than the undergraduate level there. The mathematics required is not excessive, but a genuine knowledge of physics is often required, and they provide many references to the second volume, though any standard physics text and course would also suffice. Among the topics are the thermodynamic analysis of solidification processes in metals and alloys, nucleation, crystal growth controlled by heat and mass transport, eutectic solidification structures, and metallic glasses and amorphous alloy melts. Answers to the chapter-end exercises are appended.

TN695 2012-936630 978-0-85709-066-9

Handbook of metal injection molding.

Title main entry. Ed. by Donald F. Heaney.

Woodhead Publishing, ©2012 586 p. $290.00

Mechanical engineers, materials scientists, and contributors whose fields are not clearly identified provide a broad reference to the technology. They begin with commercial trends and prospects, then cover processing, quality issues, special metal injection molding processes, and metal injection molding specific materials. The topics include formulating powder binders and manufacturing compounds, molding components, modeling and simulating metal injection molding, molding two-material/two-color powder, stainless steel, and thermal management materials in microelectronics.

TN798 2011-276249 978-0-08-096809-4

Extractive metallurgy of nickel, cobalt and platinum-group materials.

Crundwell, Frank K. et al.

Elsevier, ©2011 610 p. $189.95

A team of specialists from various companies and universities trace the extraction and processing of the three metals from ore in the ground to high-purity metals and chemicals. Nickel, cobalt, and platinum-group metals often occur together, are extracted together, and have similar properties. The topics discussed include smelting laterite concentrates to sulfide matte, extracting nickel and cobalt from sulfide ores, the slow cooling and solidification of converter matte, extracting cobalt from nickel laterite and sulfide ores, and smelting and converting sulfide concentrates containing platinum-group metals.

TN871 978-2-7108-1010-0

Essentials of reservoir engineering; v.2.

Donnez, Pierre.

Editions Technip, ©2012 492 p. $115.00

Donnez (French Institute of Petroleum) practiced oil reservoir engineering for over 20 years before he crossed over to teaching it. Here he builds on the foundations he established in the first volume with discussions of more advanced matters such as reservoir rock properties, multiphase flow, enhanced oil recovery, unconventional oil and gas reservoirs, petroleum resources and reserves, and the basics of economics. Distributed in the US by Atlas Books.

TN871 2011-278399 978-0-309-22138-2

Macondo well *Deepwater Horizon* blowout; lessons for improving offshore drilling safety.

National Research Council (U.S.).

National Academies Press, ©2012 176 p. $47.00 (pa)

Combining information from a special committee created by the National Academy of Engineering and National Research Council, the Marine Board of Investigation, and the Bureau of Ocean Energy Management, Regulation, and Enforcements, this report examines the causes of the April 2010 blowout of the Macondo well in the Gulf of Mexico, and provides a series of recommendations, for both the oil and gas industry and government regulators, to reduce the likelihood and impact of future losses of well control during offshore drilling. Following an introductory overview of the event and similar occurrences in the past, individual chapters address well design and construction, the blowout preventer system, mobile offshore drilling units, industry management of offshore drilling, and regulatory reform. No subject index is provided.

TN880 2012-021237 978-0-7844-1239-8

Seismic resilience of natural gas systems; improving performance.

Title main entry. Ed. by Peter W. McDonough.

Am. Society of Civil Engineers, ©2012 77 p. $60.00 (pa)

Members of the Gas and Liquid Fuels Committee of the Society's Technical Council on Lifeline Earthquake Engineering examine efforts to mitigate seismic risk in the American natural gas system. They cover protecting steel pipelines from permanent ground deformation using expanded polystyrene geofoam, internal pipe lining as a mitigation tool, system modeling for seismic events, managing pipeline integrity, and seismic gas shutoff valves and excess flow valves.

CHEMICAL TECHNOLOGY

TP155 2011-276748 978-0-08-097174-2

Chemical and process plant commissioning handbook; a practical guide to plant system and equipment installation and commissioning.

Killcross, Martin.

Elsevier, ©2012 285 p. $124.99

This handbook for new and experienced commissioning engineers, project managers, and operations managers offers a methodology for commissioning chemical and process plants, which can be used when commissioning a new plant, or for modified equipment in an existing facility, or in a turnaround or overhaul scenario. The handbook takes the approach that commissioning is a series of checks and counter-checks to confirm that the newly constructed chemical plant is fit for purpose and suitable for ongoing operation. The book is divided into sections on preparation, implementation, and close-out, with much information in bullet list format. For each step of the process, the handbook offers worked examples, checklists, and guidance on paperwork. The book also includes about 70 pages of sample blank documents, which can be used