

Cambridge University Press

978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials
Research Society Symposium Proceedings: Volume 1052

Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter

[More information](#)

**Microelectromechanical
Systems — Materials
and Devices**

Cambridge University Press

978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials
Research Society Symposium Proceedings: Volume 1052

Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter

[More information](#)

Cambridge University Press

978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials Research Society Symposium Proceedings: Volume 1052

Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter

[More information](#)

**MATERIALS RESEARCH SOCIETY
SYMPOSIUM PROCEEDINGS VOLUME 1052**

**Microelectromechanical
Systems — Materials
and Devices**

Symposium held November 26–28, 2007, Boston, Massachusetts, U.S.A.

EDITORS:

David A. LaVan

Yale University
New Haven, Connecticut, U.S.A.

Mark G. da Silva

Exponent Inc.
Natick, Massachusetts, U.S.A.

S. Mark Spearing

University of Southampton
Highfield, Southampton, United Kingdom

Srikar Vengallatore

McGill University
Montreal, Québec, Canada



Materials Research Society
Warrendale, Pennsylvania

Cambridge University Press

978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials Research Society Symposium Proceedings: Volume 1052

Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter

[More information](#)

CAMBRIDGE UNIVERSITY PRESS

Cambridge, New York, Melbourne, Madrid, Cape Town,
Singapore, São Paulo, Delhi, Mexico City

Cambridge University Press

32 Avenue of the Americas, New York NY 10013-2473, USA

Published in the United States of America by Cambridge University Press, New York

www.cambridge.org

Information on this title: www.cambridge.org/9781107408586

Materials Research Society

506 Keystone Drive, Warrendale, PA 15086

<http://www.mrs.org>

© Materials Research Society 2008

This publication is in copyright. Subject to statutory exception
and to the provisions of relevant collective licensing agreements,
no reproduction of any part may take place without the written
permission of Cambridge University Press.

This publication has been registered with Copyright Clearance Center, Inc.

For further information please contact the Copyright Clearance Center,
Salem, Massachusetts.

First published 2008

First paperback edition 2012

Single article reprints from this publication are available through

University Microfilms Inc., 300 North Zeeb Road, Ann Arbor, MI 48106

CODEN: MRSPDH

ISBN 978-1-107-40858-6 Paperback

Cambridge University Press has no responsibility for the persistence or
accuracy of URLs for external or third-party internet websites referred to in
this publication, and does not guarantee that any content on such websites is,
or will remain, accurate or appropriate.

CONTENTS

Prefacexi
Materials Research Society Symposium Proceedings.....xii

MICROMECHANICS I

*** A Review of Tension Test Methods for Thin Films3**
William N. Sharpe Jr.
**Reliability of MEMS Materials: Mechanical Characterization
of Thin Films Using the Wafer Scale Bulge Test and Improved
Microtensile Techniques.....15**
Joao Gaspar, Marek Schmidt, Jochen Held, and Oliver Paul
*** Fast Characterization of Silicon Membrane Structures by
Laser-Doppler Vibrometry21**
Ronny Gerbach, Matthias Ebert, and Joerg Bagdahn
**MEMS Lubrication: An Atomistic Perspective of a Bound +
Mobile Lubricant.....29**
Douglas L. Irving and Donald W. Brenner

MICROMECHANICS II

*** Microstructural and Geometrical Factors Influencing the
Mechanical Failure of Polysilicon for MEMS37**
Krishna Jonnalagadda and Ioannis Chasiotis
*** Passive Devices for Determining Fracture Strength of
MEMS Structural Materials.....47**
H. Kahn, R. Ballarini, and A.H. Heuer
**Effect of Surface Oxide Layer on Mechanical Properties of
Single Crystalline Silicon.....53**
Kenji Miyamoto, Koji Sugano, Toshiyuki Tsuchiya, and
Osamu Tabata

*Invited Paper

**Indentation Characterization of Fracture Toughness and
Interfacial Strength of PECVD Nitrides After Rapid Thermal
Annealing.....59**
H-Y. Yan, K-S. Ou, and K-S. Chen

**A Novel Micro Tensile Testing Instrument with Replaceable
Testing Specimen by Parylene Passivation Technique.....65**
Yung-Dong Lau, Tso-Chi Chang, Hong Hocheng,
Rongshun Chen, and Weileun Fang

POSTER SESSION

Mechanical Stress Sensors for Copper Damascene Interconnects73
Romain Delamare, Sylvain Blayac, Moustafa Kasbari,
Karim Inal, and Christian Rivero

**Elastic and Viscoelastic Characterization of Polydimethylsiloxane
(PDMS) for Cell-Mechanics Applications.....81**
I-Kuan Lin, Yen-Ming Liao, Yan Liu, Kuo-Shen Chen,
and Xin Zhang

**A Direct Method of Determining Complex Depth Profiles of
Residual Stresses in Thin Films on a Nanoscale—Mechanics
of Residually Stressed Systems87**
Stefan Massl, Jozef Keckes, and Reinhard Pippan

**Modification of Conductivity and of Mechanical Properties of
Electroactive Polymer (EAP) Thin Films by Titanium Ion
Implantation.....93**
Muhammed Niklaus, Samuel Rosset, Massoud Dadras,
Philippe Dubois, and Herbert R. Shea

**C-Axis Oriented ZnO Film by RF Sputtering and Its
Integration with MEMS Processing99**
Sudhir Chandra and Ravindra Singh

**Optimization of the Geometry of the MEMS Electrothermal
Actuator to Maximize In-Plane Tip Deflection 105**
Edward S. Kolesar, Thiri Htun, Brandon Least,
Jeffrey Tippey, and John Michalik

**Aligned Low-Temperature Wafer Bonding for MEMS
Manufacturing: Challenges and Promises..... 111**
Viorel Dragoi, Thorsten Matthias, Gerald Mittendorfer,
and Paul Lindner

Cambridge University Press
978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials
Research Society Symposium Proceedings: Volume 1052
Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter
[More information](#)

**Compressive Stress Accumulation in Composite
Nanoporous Gold and Silicone Bilayer Membranes:
Underlying Mechanisms and Remedies 117**
Erkin Seker, Ling Huang, Matthew R. Begley,
Hilary Bart-Smith, Robert G. Kelly, Giovanni Zangari,
Michael L. Reed, and Marcel Utz

**Variation in Dislocation Pattern Observed in SCS Films
Fractured by Tensile Test: Effects of Film Thickness and
Testing Temperature 123**
Shigeki Nakao, Taeko Ando, Shigeo Arai, Noriyuki Saito,
and Kazuo Sato

**Micro-Topography Enhances Directional Myogenic
Differentiation of Skeletal Precursor Cells..... 129**
Yi Zhao

**RF MEMS Behavior, Surface Roughness and Asperity
Contact..... 135**
O. Rezvanian, M.A. Zikry, C. Brown, and J. Krim

**The Effect of Hydrophobic Patterning on Micromolding of
Aqueous-Derived Silk Structures 141**
Konstantinos Tsioris, Robert D. White, David L. Kaplan,
and Peter Y. Wong

MEMS DEVICES I

**Fabrication and Characterization of Normal and Shear
Stresses Sensitive Tactile Sensors by Using Inclined
Micro-Cantilevers Covered with Elastomer 151**
Masayuki Sohgewa, Yu-Ming Huang, Minoru Noda,
Takeshi Kanashima, Kaoru Yamashita, Masanori Okuyama,
Masaaki Ikeda, and Haruo Noma

Design and Fabrication of an Optical-MEMS Sensor 157
Vaibhav Mathur, Jin Li, and William D. Goodhue

MEMS DEVICES II

**Relative Resistance Chemical Sensors Built on
Microhotplate Platforms 165**
Joshua L. Hertz, Christopher B. Montgomery,
David L. Lahr, and Steve Semancik

Cambridge University Press
978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials
Research Society Symposium Proceedings: Volume 1052
Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter
[More information](#)

**Novel Differential Surface Stress Sensor for Detection of
Chemical and Biological Species..... 171**
Kyungho Kang and Pranav Shrotriya

**POSTER SESSION:
MEMS**

Excimer Laser Induced Patterning of PSZT and PLZT Films..... 179
Patrick William Leech and Anthony S. Holland

**Optically Actuated Deformable Micro-Mirrors for Adaptive
Optics 185**
Troy Ribaudo, Jin Li, Bahareh Haji-saeed, Jed Khoury,
and William Goodhue

**High Temperature Annealing Studies on the Piezoelectric
Properties of Thin Aluminum Nitride Films 191**
R. Farrell, V.R. Pagán, A. Kabulski, Sridhar Kuchibhatla,
J. Harman, K.R. Kasarla, L.E. Rodak, J. Peter Hensel,
P. Famouri, and D. Korakakis

**A Miniature Silicon Condenser Microphone Improved with a
Flexure Hinge Diaphragm and a Large Back Volume 197**
H.J. Kim, S.Q. Lee, J.W. Lee, S.K. Lee, and K.H. Park

**Comparison of 1D and 2D Theories of Thermoelastic
Damping in Flexural Microresonators..... 205**
Sairam Prabhakar and Srikar Vengallatore

Compliant MEMS Motion Characterization by Nanoindentation 211
Joseph Goerges Choueifati, Craig Lusk, Xialou Pang,
and Alex A. Volinsky

**Effects of Supercritical Carbon Dioxide on Adhesive
Strength Between Micro-Sized Photoresist Patterns and
Silicon Substrates..... 217**
Chiemi Ishiyama, Akinobu Shibata, Masato Sone, and
Yakichi Higo

**Protection Layer Influence on Capacitive Micromachined
Ultrasonic Transducers Performance 223**
Edgard Jeanne, Cyril Meynier, Franck Teston,
Dominique Certon, Nicolas Felix, Mathieu Roy,
and Daniel Alquier

Cambridge University Press
978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials
Research Society Symposium Proceedings: Volume 1052
Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter
[More information](#)

**Fabrication of C54-TiSi₂ Thin Films Using Cathodic Arc
Deposition and Rapid Thermal Annealing.....229**
Hui Xia, William R. Knudsen, and Paul L. Bergstrom

**New Experimental Approach for Measuring Electrical
Contact Resistance with an Accurate Mechanical
Actuation, Evaluation of the Performances of Gold
Micro-Switches.....235**
Cedric Seguneau, Adrien Broue, Fabienne Pennec,
J  r  mie Dhennin, Jean-Michel Desmarres,
Arnaud Pothier, Xavier Lafontan, and Michel Ignat

**A Comparative Study of the Strength of Si, SiN and SiC
Used at Nanoscales.....241**
Tuncay Alan and Pasqualina M. Sarro

Compressive Magnetostriction of FeSm Alloy Film247
Ryo Nakano, Yoshihito Matsumura, and Yoshitake Nishi

MEMS MATERIALS AND PROCESSES I

**Influence of Materials on the Performance Limits of
Microactuators.....253**
Prasanna Srinivasan and S. Mark Spearing

**Science and Technology of Piezoelectric/Diamond Hybrid
Heterostructures for High Performance MEMS/NEMS
Devices259**
Orlando Auciello, Anirudha Sumant, Jon Hiller,
Bernd Kabius, and Sudarsan Srinivasan

**Relationship Between Film Stress and Dislocation
Microstructure Evolution in Thin Films.....265**
Ray S. Fertig and Shefford P. Baker

**Systematic Characterization of DRIE-Based Fabrication
Process of Silicon Microneedles.....271**
Jochen Held, Joao Gaspar, Patrick Ruther,
Matthias Hagner, Andreas Cismak, Andreas Heilmann,
and Oliver Paul

**Novel Fabrication Process for the Integration of MEMS
Devices with Thick Amorphous Soft Magnetic Field
Concentrators.....277**
Simon Brugger, Wilhelm Pfleging, and Oliver Paul

Cambridge University Press
978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials
Research Society Symposium Proceedings: Volume 1052
Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter
[More information](#)

MEMS MATERIALS AND PROCESSES II

Analysis and Measurement of Forces in an Electrowetting-Driven Oscillator.....285
Nathan Brad Crane, Alex A. Volinsky, Vivek Ramadoss,
Michael Nellis, Pradeep Mishra, and Xiaolu Pang

Bottom-Up Fabrication of Individual SnO₂ Nanowires-Based Gas Sensors on Suspended Micromembranes.....291
Albert Romano-Rodriguez, Francisco Hernandez-Ramirez,
Joan Daniel Prades, Albert Tarancon, Olga Casals,
Roman Jimenez-Diaz, Miguel Angel Juli,
Juan Ramon Morante, Sven Barth, Sanjay Mathur,
Andreas Helwig, Jan Spannhake, and Gerhard Mueller

Nature-Inspired Microfluidic Manipulation Using Magnetic Actuators297
S.N. Khaderi, D. Ioan, J.M.J. den Toonder, and
P.R. Onck

MEMS-Based MHz Silicon Ultrasonic Nozzles for Production of Monodisperse Drops.....305
Y.L. Song, Chih H. Cheng, Ning Wang, Shirley C. Tsai,
Yuan F. Chou, Ching T. Lee, and Chen S. Tsai

*SELECT PAPER FROM
SYMPOSIUM N*

Enabling the Desktop NanoFab with DPN® Pen and Ink Delivery Systems313
Joseph S. Fragala, R. Roger Shile, and Jason Haaheim

Author Index321

Subject Index.....325

Cambridge University Press

978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials Research Society Symposium Proceedings: Volume 1052

Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter

[More information](#)

PREFACE

This proceedings reports on the research presented in Symposium DD, "Microelectromechanical Systems—Materials and Devices," held November 26–28 at the 2007 MRS Fall Meeting in Boston, Massachusetts. This symposium was devoted to research involving MEMS materials and MEMS devices, including RF-MEMS, optical MEMS, MEMS metrology, tribology, materials characterization, and mechanical behavior, MEMS surfaces, surface modifications, and interfaces, MEMS reliability, packaging, and life assessment, MEMS modeling and software tools for materials integration, biocompatibility of MEMS materials and devices, new materials and fabrication methodologies for MEMS (including integration of nanostructured, nanocomposite, and biomimic materials with MEMS), microfluidics and nanofluidics, *in vivo* drug/gene/protein delivery, novel actuators, MEMS cell-based systems, MEMS neural interfaces, MEMS sensors and MEMS microengines and microfuel cells.

This symposium was organized as a continuation of the Materials Science of Microelectromechanical Systems (MEMS) Devices symposium first held during a 1998 Materials Research Society Meeting. In the past nine years, many sophisticated devices have been designed and studied. Many aspects of MEMS materials behaviors have also been characterized. However, there remain many basic questions about the relationship between process, properties and function for MEMS materials. Many experimental methods have been developed, but there is a lack of standardization that would allow comparison between laboratories and commercial vendors or the creation of materials specifications that would enable greater commercialization of MEMS.

This proceedings volume also includes one paper from Symposium N, "Materials, Integration and Technology for Monolithic Instruments II," which was organized by J. Theil, R. Thewes, D.S. Gardner, S. Miller, and P. Catrysse. Symposium N was a one-day invitation-only session also held at the 2007 MRS Fall Meeting. This paper, from the "Architecture and Integration" session, is included in the last section of this volume entitled "Select Paper from Symposium N."

The organizers would especially like to thank the invited speakers that brought depth and context to the symposium: Joerg Bagdahn, Ioannis Chasiotis, Maarten de Boer, Erik Deutsch, Hal Kahn, Scott Manalis, John Santini, William N. Sharpe Jr., and Brian Wardle. On behalf of all the participants, the organizers would also like to thank MEMS Industry Group, Silix Microsystems AB, Springer and MRS for providing financial support for the symposium.

David A. LaVan
Mark G. da Silva
S. Mark Spearing
Srikar Vengallatore

February 2008

Cambridge University Press

978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials Research Society Symposium Proceedings: Volume 1052

Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore

Frontmatter

[More information](#)

MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS

- Volume 1024E —Combinatorial Methods for High-Throughput Materials Science, D.S. Ginley, M.J. Fasolka, A. Ludwig, M. Lippmaa, 2008, ISBN 978-1-60511-000-4
- Volume 1025E —Nanoscale Phenomena in Functional Materials by Scanning Probe Microscopy, L. Degertekin, 2008, ISBN 978-1-60511-001-1
- Volume 1026E —Quantitative Electron Microscopy for Materials Science, E. Snoeck, R. Dunin-Borkowski, J. Verbeeck, U. Dahmen, 2008, ISBN 978-1-60511-002-8
- Volume 1027E —Materials in Transition—Insights from Synchrotron and Neutron Sources, C. Thompson, H.A. Dürr, M.F. Toney, D.Y. Noh, 2008, ISBN 978-1-60511-003-5
- Volume 1029E —Interfaces in Organic and Molecular Electronics III, K.L. Kavanagh, 2008, ISBN 978-1-60511-005-9
- Volume 1030E —Large-Area Processing and Patterning for Active Optical and Electronic Devices, V. Bulović, S. Coe-Sullivan, I.J. Kymissis, J. Rogers, M. Shtein, T. Someya, 2008, ISBN 978-1-60511-006-6
- Volume 1031E —Nanostructured Solar Cells, A. Luque, A. Marti, 2008, ISBN 978-1-60511-007-3
- Volume 1032E —Nanoscale Magnetic Materials and Applications, J-P. Wang, 2008, ISBN 978-1-60511-008-0
- Volume 1033E —Spin-Injection and Spin-Transfer Devices, R. Allenspach, C.H. Back, B. Heinrich, 2008, ISBN 978-1-60511-009-7
- Volume 1034E —Ferroelectrics, Multiferroics, and Magnetoelectrics, J.F. Scott, V. Gopalan, M. Okuyama, M. Bibes, 2008, ISBN 978-1-60511-010-3
- Volume 1035E —Zinc Oxide and Related Materials—2007, D.P. Norton, C. Jagadish, I. Buyanova, G-C. Yi, 2008, ISBN 978-1-60511-011-0
- Volume 1036E —Materials and Hyperintegration Challenges in Next-Generation Interconnect Technology, R. Geer, J.D. Meindl, R. Baskaran, P.M. Ajayan, E. Zschech, 2008, ISBN 978-1-60511-012-7
- Volume 1037E —Materials, Integration, and Technology for Monolithic Instruments II, D. LaVan, 2008, ISBN 978-1-60511-013-4
- Volume 1038 — Nuclear Radiation Detection Materials, D.L. Perry, A. Burger, L. Franks, M. Schieber, 2008, ISBN 978-1-55899-985-5
- Volume 1039 — Diamond Electronics—Fundamentals to Applications II, R.B. Jackman, C. Nebel, R.J. Nemanich, M. Nesladek, 2008, ISBN 978-1-55899-986-2
- Volume 1040E —Nitrides and Related Bulk Materials, R. Knip, F.J. DiSalvo, R. Riedel, Z. Fisk, Y. Sugahara, 2008, ISBN 978-1-60511-014-1
- Volume 1041E —Life-Cycle Analysis for New Energy Conversion and Storage Systems, V.M. Fthenakis, A.C. Dillon, N. Savage, 2008, ISBN 978-1-60511-015-8
- Volume 1042E —Materials and Technology for Hydrogen Storage, G-A. Nazri, C. Ping, A. Rougier, A. Hosseinmardi, 2008, ISBN 978-1-60511-016-5
- Volume 1043E —Materials Innovations for Next-Generation Nuclear Energy, R. Devanathan, R.W. Grimes, K. Yasuda, B.P. Uberuaga, C. Meis, 2008, ISBN 978-1-60511-017-2
- Volume 1044 — Thermoelectric Power Generation, T.P. Hogan, J. Yang, R. Funahashi, T. Tritt, 2008, ISBN 978-1-55899-987-9
- Volume 1045E —Materials Science of Water Purification—2007, J. Georgiadis, R.T. Cygan, M.M. Fidalgo de Cortalezzi, T.M. Mayer, 2008, ISBN 978-1-60511-018-9

Cambridge University Press

978-1-107-40858-6 - Microelectromechanical Systems — Materials and Devices: Materials Research Society Symposium Proceedings: Volume 1052

Editors: David A. LaVan, Mark G. da Silva, S. Mark Spearing and Srikar Vengallatore
Frontmatter

[More information](#)

MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS

- Volume 1046E —Forum on Materials Science and Engineering Education for 2020, L.M. Bartolo, K.C. Chen, M. Grant Norton, G.M. Zenner, 2008, ISBN 978-1-60511-019-6
- Volume 1047 — Materials Issues in Art and Archaeology VIII, P. Vandiver, F. Casadio, B. McCarthy, R.H. Tykot, J.L. Ruvalcaba Sil, 2008, ISBN 978-1-55899-988-6
- Volume 1048E —Bulk Metallic Glasses—2007, J. Schroers, R. Busch, N. Nishiyama, M. Li, 2008, ISBN 978-1-60511-020-2
- Volume 1049 — Fundamentals of Nanoindentation and Nanotribology IV, E. Le Bourhis, D.J. Morris, M.L. Oyen, R. Schwaiger, T. Staedler, 2008, ISBN 978-1-55899-989-3
- Volume 1050E —Magnetic Shape Memory Alloys, E. Quandt, L. Schultz, M. Wuttig, T. Kakeshita, 2008, ISBN 978-1-60511-021-9
- Volume 1051E —Materials for New Security and Defense Applications, J.L. Lenhart, Y.A. Elabd, M. VanLandingham, N. Godfrey, 2008, ISBN 978-1-60511-022-6
- Volume 1052 — Microelectromechanical Systems—Materials and Devices, D. LaVan, M.G. da Silva, S.M. Spearing, S. Vengallatore, 2008, ISBN 978-1-55899-990-9
- Volume 1053E —Phonon Engineering—Theory and Applications, S.L. Shinde, Y.J. Ding, J. Khurgin, G.P. Srivastava, 2008, ISBN 978-1-60511-023-3
- Volume 1054E —Synthesis and Surface Engineering of Three-Dimensional Nanostructures, O. Hayden, K. Nielsch, N. Kovtyukhova, F. Caruso, T. Veres, 2008, ISBN 978-1-60511-024-0
- Volume 1055E —Excitons and Plasmon Resonances in Nanostructures, A.O. Govorov, Z.M. Wang, A.L. Rogach, H. Ruda, M. Brongersma, 2008, ISBN 978-1-60511-025-7
- Volume 1056E —Nanophase and Nanocomposite Materials V, S. Komarneni, K. Kaneko, J.C. Parker, P. O'Brien, 2008, ISBN 978-1-60511-026-4
- Volume 1057E —Nanotubes and Related Nanostructures, Y.K. Yap, 2008, ISBN 978-1-60511-027-1
- Volume 1058E —Nanowires—Novel Assembly Concepts and Device Integration, T.S. Mayer, 2008, ISBN 978-1-60511-028-8
- Volume 1059E —Nanoscale Pattern Formation, W.J. MoberlyChan, 2008, ISBN 978-1-60511-029-5
- Volume 1060E —Bioinspired Polymer Gels and Networks, F. Horkay, N.A. Langrana, A.J. Ryan, J.D. Londono, 2008, ISBN 978-1-60511-030-1
- Volume 1061E —Biomolecular and Biologically Inspired Interfaces and Assemblies, J.B.-H. Tok, 2008, ISBN 978-1-60511-031-8
- Volume 1062E —Protein and Peptide Engineering for Therapeutic and Functional Materials, M. Yu, S.-W. Lee, D. Woolfson, I. Yamashita, B. Simmons, 2008, ISBN 978-1-60511-032-5
- Volume 1063E —Solids at the Biological Interface, V.L. Ferguson, J.X.-J. Zhang, C. Stoldt, C.P. Frick, 2008, ISBN 978-1-60511-033-2
- Volume 1064E —Quantum-Dot and Nanoparticle Bioconjugates—Tools for Sensing and Biomedical Imaging, J. Cheon, H. Mattoussi, C.M. Niemeyer, G. Strouse, 2008, ISBN 978-1-60511-034-9
- Volume 1065E —Electroactive and Conductive Polymers and Carbon Nanotubes for Biomedical Applications, X.T. Cui, D. Hoffman-Kim, S. Luebben, C.E. Schmidt, 2008, ISBN 978-1-60511-035-6

Prior Materials Research Society Symposium Proceedings available by contacting Materials Research Society