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Editors: Arokia Nathan, Andrew Flewitt, Jack Hou, Seiichi Miyazaki and Jeffrey Yang
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**Amorphous and Polycrystalline
Thin-Film Silicon Science
and Technology—2008**

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**MATERIALS RESEARCH SOCIETY
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Amorphous and Polycrystalline Thin-Film Silicon Science and Technology—2008

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PREFACE

Amorphous, nano-, micro-, and poly-crystalline silicon thin films, and associated alloys are used in a plethora of applications ranging from active matrix displays and imaging arrays to solar panels. These applications make large-area electronics the fastest growing semiconductor technology today, pushing material requirements and device performance to new limits. As one of the longest running MRS symposia, Symposium A, "Amorphous and Polycrystalline Thin-Film Silicon Science and Technology," held March 25–28 at the 2008 MRS Spring Meeting in San Francisco, California, continued its long-standing tradition to provide scientists and engineers an excellent forum to discuss issues ranging from film deposition and associated electronic and optical properties to design, fabrication and analysis of devices, and their integration into systems. Materials addressed include amorphous, nano, micro, and poly-crystalline silicon, and their alloys with germanium, carbon, and other elements.

The current challenges in thin-film silicon technology were addressed with an opening full-day tutorial given by Friedhelm Finger and Michio Kondo, followed by 10 invited talks, 61 contributed oral presentations and 56 poster presentations. Topics addressed included the understanding of growth processes; producing high-quality films at high growth rates or low temperatures; *in-situ* characterization techniques for monitoring growth; understanding amorphous, mixed-phase and crystalline structures, along with the principles for augmenting crystallinity; developing post-deposition processes, such as thermal or laser annealing; identifying fundamental issues in electronic structure and carrier transport in three-, two-, and one-dimensions; understanding metastability and the role of hydrogen; integrating photovoltaic devices and thin-film electronics into systems on glass, flexible polymeric, and other non-conventional substrates; and designing, fabricating, and testing new and improved devices and applications.

The success of Symposium A would not have been possible if not for the high-quality invited and contributed oral and poster presentations, including the contributors and reviewers of this proceedings volume. Our thanks also goes to Mary Ann Woolf for managing the tireless manuscript reviewing process and for the timely production of this volume.

Last but not least, we are grateful for the generous financial support of our corporate sponsors: AU Optronics Corp., CYTEK Taiwan Ltd., Fuji Electric Advanced Technology Co. Ltd., ITRI, Merck Chemicals UK., Sharp Labs of America, and United Solar Ovonic LLC.

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