

The Electrochemical Society

Atomic Layer Deposition

at the 208th ECS Meeting

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PREFACE

The first symposium on *Atomic Layer Deposition Applications: Challenges and Opportunities* was held on October 17 through October 19, 2005 in the Westin Bonaventure Los Angeles Hotel, California as part of the 208th Meeting of The Electrochemical Society.

The symposium's focus is on the current and future applications for Atomic Layer Deposition (ALD), including emerging and non-mainstream ALD applications. The first ALD processes were run more than 30 years ago and the first high volume production application of ALD was in the manufacturing of thin film electroluminescent displays by Planar Systems in the mid-1980s. More recently, the continuous scaling of semiconductor devices has brought considerable attention to ALD. ALD can enable the precise deposition of ultra-thin, ~ 100% conformal coatings with controlled composition and low sensitivity to substrate size. To date ALD has been introduced in manufacturing of disk drive recording heads as the read gap dielectric, in DRAM capacitor dielectrics, and in IC interconnects for W seed layers. The wider adoption of ALD as well as the extendibility of current applications faces a number of challenges, such as integration into the process flow, productivity enhancement, development of ALD precursors and associated delivery systems, overall cost of ownership (COO), etc.

This symposium transactions issue contains refereed papers presented at the symposium. A broad variety of ALD applications is covered, including: gate stack interconnects, data storage, and emerging technologies. Some papers report on progress in ALD processes, precursors, and equipment development.

Joint sessions with the High Dielectric Constant Gate Stacks III symposium on High-*k* Materials for Memory – NVM and DRAM were held in the afternoon on October 17. The papers presented in these joint sessions are included in the transactions issue of that symposium.

A reception was held after the last presentation in the symposium, giving the attendees a great opportunity for networking and sharing research work, learning, opinions, and ideas about ALD.

We thank the invited speakers for their outstanding presentations: Marc Schaeckers, *IMEC*; Eric Eisenbraun, *The University at Albany-SUNY*; Uwe Schroeder, *Infineon Technologies*; Steven George, *Colorado University*; Mei Chang, *Applied Materials*; Cynthia Hoover, *Praxair*; Oscar Van der Straten, *IBM*; Paul Kirsch, *International Sematech*; Jane Chang, *UCLA*; Ming Mao, *Veeco Instruments*, and Tom Seidel, *AIXTRON Genus*.

Finally, we gratefully acknowledge the financial support of the symposium sponsors: AIXTRON, Genus, Hitachi, MKS, Praxair, and Veeco Instruments.

Ana R. Londergan
Howard G. Zolla
Tony P. Chiang
G. S. Mathad



Facts about ECS

The Electrochemical Society (ECS) is an international, nonprofit, scientific, educational organization founded for the advancement of the theory and practice of electrochemistry, electrothermics, electronics, and allied subjects. The Society was founded in Philadelphia in 1902 and incorporated in 1930. There are currently over 7,000 scientists and engineers from more than 70 countries who hold individual membership; the Society is also supported by more than 100 corporations through Corporate Memberships.

The technical activities of the Society are carried on by Divisions. Sections of the Society have been organized in a number of cities and regions. Major international meetings of the Society are held in the spring and fall of each year. At these meetings, the Divisions and Groups hold general sessions and sponsor symposia on specialized subjects.

The Society has an active publications program that includes the following.

Journal of The Electrochemical Society — JES is the peer-reviewed leader in the field of electrochemical and solid-state science and technology. Articles are posted online as soon as they become available for publication. This archival journal is also available in a paper edition, published monthly following electronic publication.

Electrochemical and Solid-State Letters — ESL is the first and only rapid-publication electronic journal covering the same technical areas as JES. Articles are posted online as soon as they become available for publication. This peer-reviewed, archival journal is also available in a paper edition, published monthly following electronic publication. It is a joint publication of ECS and the IEEE Electron Devices Society.

Interface — *Interface* is ECS's quarterly news magazine. It provides a forum for the lively exchange of ideas and news among members of ECS and the international scientific community at large. Published online (with free access to all) and in paper, issues highlight special features on the state of electrochemical and solid-state science and technology. The paper edition is automatically sent to all ECS members.

Meeting Abstracts (formerly Extended Abstracts) — Abstracts of the technical papers presented at the spring and fall meetings of the Society are published on CD-ROM.

ECS Transactions — This online database provides access to full-text articles presented at ECS and ECS-sponsored meetings. Content is available through individual articles, or as collections of articles representing entire symposia.

Monograph Volumes — The Society sponsors the publication of hardbound monograph volumes, which provide authoritative accounts of specific topics in electrochemistry, solid-state science, and related disciplines.

For more information on these and other Society activities, visit the ECS website:

www.electrochem.org

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