



Strasbourg (France)

**E-MRS IUMRS ICEM 2006 Spring Meeting
Nice, France - May 29 – June 2, 2006**

SYMPOSIUM L

Characterization of High-k Dielectric Materials

Symposium Organizers:

Jarek Dabrowski, IHP, Frankfurt (Oder), Germany

Paul Hurley, Tyndall National Institute, Cork, Ireland

Junichi Murato, University of Tohoku, Japan

Eicke R. Weber, University of California, Berkeley, USA

Symposium Support

Papers to be published in Materials Science in Semiconductor Processing

Symposium L

- L 7b 14 Influence of Polarization Electric Field on the Dielectric Properties of BaTiO₃-based Ceramics
M.T. Benlahrache, N. Benhamla, S. Achour and S. E. Barama C eramics Laboratory - University
Mentouri, Constantine 25000, Algeria
- L 7b 15 Effects of PT buffer layer on the orientation and ferroelectric properties of PZT films
School of Information and Communication Engineering, Sungkyunkwan University
- L 7b 16 HfO₂ thin films formed by ion assisted e-beam evaporation – the role of low energy ions on
equivalent oxide thickness, structure and interfacial chemistry
G.Cooke*, S. Romani*, H.Kheyrandish*, S.McDonnell**, G.Hughes**, K.Cherkaoui*** and
P.K.Hurley*** * CSMA - MATS, Queens Road, Stoke on Trent, UK ** Dept. of Physics, Dublin
City University, Dublin, Ireland ** Tyndall National Institute, University College Cork, Ireland
- L 7b 17 Impact of Nitrogen Incorporation of High Concentration Ozone Oxidation Prepared Ultra-thin
HfO₂
L. Wang, K. Xue and J. B. Xu* Department of Electronic Engineering and Material Science and
Technology Research Center, The Chinese University of Hong Kong, Shatin, NT, Hong Kong
SAR A. P. Huang and Paul K. Chu Department of Physics and Materials Science, City University
of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong SAR
- L 7b 18 Optimization of Electric Characteristics of High-K Zirconium Dioxide by Varying Deposition and
Annealing Conditions
M. Silinskas, M. Lisker, S. Matichyn, B. Kalkofen, and E. P. Burte Institute of Micro and Sensor
Systems, Otto-von-Guericke University Magdeburg Universit tsplatz 2, 39106 Magdeburg,
Germany
- L 7b 19 ION BEAM SYNTHESIS AND CHARACTERIZATION OF YTTRIUM SILICIDE IN Si(111)
R. AYACHE¹, A. BOUABELLOU², F. EICHHORN³, E. RICHTER³ and A. M CKLICH³ ¹ Pharmacy
Department, University of Batna, 05000 Algeria. ² Laboratoire Couches Minces et Interfaces,
Campus Chaab Errassas, Universit  Mentouri de Constantine, 25000 Algeria. ³
Forschungszentrum Rossendorf, Institute of Ion Beam Physics and Materials Research, POB
510119, D-01314 Dresden, Germany.
- L 7b 20 MOCVD and characterization of Hf-silicate films using Hf-alkoxide and Si-amido precursors
Jaehyun Kim and Kijung Yong Electrical and Computer Engineering Division, Department of
Chemical Engineering, Pohang University of Science and Technology (POSTECH), San 31,
Hyoja-dong, Nam-gu, Pohang, Kyungbuk 790-784, Korea

(view full abstract)

L 7b poster
00 16:15

Title : IMPACT OF IN-SITU POST NITRIDATION ANNEARING ON SUCCESSFUL HIGH-K FABRICATION

(view full abstract)

L 7b poster
00 16:15

Title : Influence of Polarization Electric Field on the Dielectric Properties of BaTiO₃-based Ceramics

(view full abstract)

L 7b poster
00 16:15

Title : Effects of PT buffer layer on the orientation and ferroelectric properties of PZT films

(view full abstract)

L 7b poster
00 16:15

Title : HfO₂ thin films formed by ion assisted e-beam evaporation – the role of low energy ions on equivalent oxide thickness, structure and interfacial chemistry

(view full abstract)

L 7b poster
00 16:15

Title : Impact of Nitrogen Incorporation of High Concentration Ozone Oxidation Prepared Ultra-thin HfO₂

Lei Wang, L. Wang, K. Xue and J. B. Xu* Department of Electronic Engineering and Material Science and Technology Research Center, The Chinese University of Hong Kong, Shatin, NT, Hong Kong SAR A. P. Huang and Paul K. Chu Department of Physics and Materials Science, City University of Hong Kong, Tat Chee Avenue, Kowloon, Hong Kong SAR

Resume : HfO₂ and Hf silicates are emerging as promising oxides to potentially replace SiO₂ as the gate dielectric material for future complementary metal–oxide–semiconductor (CMOS) technology. The main challenges for synthesis of HfO₂ are the interfacial properties and thermal stability. In this report, we present a method to achieve highly thermal stable ultra-thin HfO₂ by combination of high concentration ozone oxidation and nitrogen incorporation. The HfO₂ samples were acquired by ozone oxidation of high-vacuum electron-beam evaporated Hf metal film and afterward nitrogen incorporation by plasma immersion ion-implantation. Compositional and structural studies show the improved thermal stability. Also electrical study further confirms the superior properties of the samples.

(close full abstract)

L 7b poster
00 16:15

Title : Optimization of Electric Characteristics of High-K Zirconium Dioxide by Varying Deposition and Annealing Conditions

(view full abstract)

L 7b poster
00 16:15

Title : ION BEAM SYNTHESIS AND CHARACTERIZATION OF YTTRIUM SILICIDE IN Si(111)

(view full abstract)

L 7b poster
00 16:15

Title : MOCVD and characterization of Hf-silicate films using Hf-alkoxide and Si-amido precursors

(view full abstract)

02/06/2006

L 8a invited
00 08:30

Title : Beyond-DFT electronic structure of defects in lanthanide and TM-based dielectrics with and without electronic correlation

(view full abstract)

L 8a
00 09:00

Title : Dielectric properties of La-based oxides deposited using atomic layer deposition

(view full abstract)

L 8a
00 09:15

Title : Investigation of sub- 1nm CET MOS Capacitors with Epitaxial Gd₂O₃ and

(view full abstract)

L 8a
00 09:30

Title : Pr containing high k films: MOCVD synthesis and nanoscopic/microscopic characterization