

## **Presentations:**

Future of PECVD and Spin-On Ultra Low-k Materials

G. Dubois, W. Volksen, T.J. Frot, T.P. Magbitang, S.M. Gates, R. Dauskardt and M. Oliver  
**IITC**, Dresden, Germany, May 2011 (*invited*)

Post Porosity Protection: a new ULK friendly integration approach

T.J. Frot, T.P. Magbitang, G Dubois, S. Purushothaman, R.L. Bruce and W. Volksen  
**MRS** Spring National Meeting, San Francisco, CA, April 2011

Molecularly Reinforced Sol-Gel Glasses with Improved Pore Size Distribution

W. Volksen, G. Dubois, T. Magbitang, T. Frot, P Rice, L. Krupp, S. Purushothaman, R. Bruce, S. Cohen, M. Lofaro, S.U. Engelmann, H. Nakagawa, M. Sekiguchi, T. Kokubo  
**MRS** Spring National Meeting, San Francisco, CA, April 2011

Post-Porosity Plasma Protection, a new approach to integrate  $k = 2.2$  porous ULK materials

G. Dubois, T.J. Frot, W. Volksen, T.P. Magbitang, D.C. Miller, S. Purushothaman, R.L. Bruce and M. Lofaro  
**IITC**, Dresden, Germany, May 2011

Future of PECVD and Spin-on Low-k Materials

G. Dubois  
**ADMETA** JAPAN 2010, Tokyo, Japan, Oct. 2010 (*invited*)

Challenges in sub-100 nm Dual Damascene Etch of Porous Oxycarbosilane Ultra Low-k Dielectrics for BEOL Integration

R.L. Bruce, S.U. Engelmann, S. Purushothaman, M. Darnon, M.F. Lofaro, S.A. Cohen, W. Volksen, T.J. Frot, T.P. Magbitang, P.M. Rice, L.E. Krupp, G. Dubois  
**AVS-57<sup>th</sup>** Int. Symposium, Albuquerque, N.M., Oct. 2010

Chip-Package Interactions from Low-k Materials Perspective

G. Dubois  
**Int. Conf. on Electronic Packaging**, Sapporo, Japan, May 2010 (*invited*)

Molecularly Reinforced Sol-Gel Glasses: Preparation, Characterization and Integration Studies

W. Volksen, R. D. Miller, T. Magbitang, V. Lee, P. Rice, G. Dubois, J. Doyle, N. Fuller, S. Engelmann, M. Darnon, M. Lofaro; S. Cohen, M. Sankarapandian, S. Purushothaman, H. Nakagawa; Y. Nobe and T. Kokubo  
**MRS** Spring National Meeting, San Francisco, CA, April 2010 (*invited*)

Factors Governing the Mechanical Properties of Porous Sol-Gel Spin-On Thin Films

G. Dubois, W. Volksen, T.P. Magbitang, M.H. Sherwood, R.D. Miller, D. Gage and R. Dauskardt  
**15<sup>th</sup> Int. Sol-Gel Conference**, Brazil, August 2009.

Molecular Network Reinforcement of Sol-Gel Glasses

G. Dubois, W. Volksen, T.P. Magbitang, R.D. Miller, D. Gage, R. Dauskardt  
**ISOS XV-15<sup>th</sup>** Int. Symp. on Organosilicon Chemistry, Jeju, Korea, June 2008

Molecular Network Reinforcement of Sol-Gel Glasses

G. Dubois, W. Volksen, T.P. Magbitang, R.D. Miller, D. Gage, R. Dauskardt  
**MRS** Spring National Meeting, San Francisco, CA, March 2008

Molecular Network Reinforcement of Sol-Gel Glasses

G. Dubois, W. Volksen, T.P. Magbitang, R.D. Miller, D. Gage, R. Dauskardt  
**MARM-ACS**, New York, N. Y., May 2008 (*invited*)

Superior Mechanical Properties of Dense and Porous Organic/Inorganic Hybrid Thin Films  
G. Dubois, W. Volksen, R.D. Miller, T.P. Magbitang, D. Gage, R. Dauskardt  
**14<sup>th</sup> Int. Sol-Gel Conference**, Montpellier, France, Sept. 2007

Superior Mechanical Properties of Dense and Porous Organic/Inorganic Hybrid Thin Films  
G. Dubois, W. Volksen, R.D. Miller, T.P. Magbitang, D. Gage, R. Dauskardt  
**VMIC 2007**, Fremont, CA, Sept. 2007 (*invited*)

Effect of Environment on the Modulus of Low-k Porous ILD Films used in the BEOL  
E. E. Simonyi, C.D. Dimitrakopoulos, S.M. Gates, M. Lane, E. Liniger, W. Volksen  
**MRS Spring National Meeting**, San Francisco, CA, April 2007

Laser Spike Annealing: A Novel Post-Porosity Treatment for Significant Toughening of Low-k Organosilicates  
W. Volksen, G. Dubois, A. Kellock, T.P. Magbitang, R.D. Miller, S.A. Cohen, E.E. Simonyi, L. Ramirez, Y. Wang  
**IITC**, Burlingame, CA, June 2006

Laser Spike Annealing: A Novel Post-Porosity Treatment for Significant Toughening of Low-k Organosilicates  
W. Volksen, G. Dubois, A. Kellock, T.P. Magbitang, R.D. Miller, S.A. Cohen, E.E. Simonyi, L. Ramirez, Y. Wang  
**VMIC 2006**, Fremont, CA, Sept. 2006 (*invited*)

New Spin-on Oxycarbosilane Low-k Dielectric Materials  
G. Dubois, W. Volksen, T.P. Magbitang, R.D. Miller  
**MRS Spring National Meeting**, San Francisco, CA, April 2006

Mechanical and Dielectric Characterization of low-k Porous Organosilicates  
G. Dubois, W. Volksen, T.P. Magbitang, H-C. Kim, R.D. Miller, P. Brock, J.L. Hedrick, V.Y. Lee, E.E. Simonyi  
**ISOS XIV**, Wurzburg, Germany, August 2005

New Spin-on Oxycarbosilane low-k Materials with Exceptional Mechanical Properties  
G. Dubois, W. Volksen, T.P. Magbitang, R.D. Miller  
**ISOS XIV**, Wurzburg, Germany, August 2005

New Spin-on Oxycarbosilane low-k Materials with Exceptional Mechanical Properties  
G. Dubois, W. Volksen, T.P. Magbitang, R.D. Miller  
**VMIC 2005**, Fremont, CA, ~~Oct.~~ Oct. 2005 (*invited*)

New Spin-on Oxycarbosilane low-k Materials with Exceptional Mechanical Properties  
G. Dubois, W. Volksen, T.P. Magbitang, R.D. Miller  
**IITC**, Fremont, CA, June 2005

Mechanical and Dielectric Characterization of low-k Porous Organosilicates  
W. Volksen, T.P. Magbitang, R.D. Miller, E.E. Simonyi, J.L. Hedrick, H-C. Kim, P. Brock, G. Dubois, L. Ramirez  
**VMIC 2005**, Fremont, CA, Oct. 2005 (*invited*)

Improvement of MSSQ Films Mechanical Properties using Silica Nanoparticles  
G. Dubois, T.P. Magbitang, W. Volksen, H-C. Kim, E.E. Simonyi, R.D. Miller  
**ACS National Spring Meeting**, Anaheim, CA, March 2004

Versatile Synthesis of Nanometer-Sized Hollow Silica Spheres  
G. Dubois, C. Jeroen, V.Y. Lee, T.P. Magbitang, H-C. Kim, W. Volksen, E. Connor, R.D. Miller  
**ACS National Spring Meeting**, Anaheim, CA, March 2004

Mechanical Properties of Porous, Low-k Organosilicates

W. Volksen, R.D. Miller, T.P. Magbitang, G. Dubois, V.Y. Lee, H-C. Kim, P. Brock, E.E. Simonyi, J.L. Hedrick, C.J. Hawker, L. Ramirez

**International Sematech:** Low-k Symposium: The 45 nm k effective challenge, San Diego CA, Oct. 2004

Mechanical Behavior of low-k, porous Organosilicates

W. Volksen, R.D. Miller, H-C. Kim, G. Dubois, T.P. Magbitang, E.E. Simonyi, L. Ramirez, P. Brock, V.Y. Lee

**VMIC** 2004, Waikoloa, Hawaii, Sept. 2004 (*invited*)

Mechanical Behavior of Organosilicates in the Hybrid and Porous State

W. Volksen, H-C. Kim, T.P. Magbitang, V.Y. Lee, P. Brock, J.L. Hedrick, C.J. Hawker, R.D. Miller, E.E. Simonyi

**ACS** Spring National Meeting, Anaheim, CA, March 2004

Effect of Molecular Architecture of Sacrificial Porogens on the Pore Structure of Nanoporous Organosilicate: A Small Angle Scattering Study

H-C. Kim, W. Volksen, T.P. Magbitang, V.Y. Lee, P. Brock, G. Dubois, J.L. Hedrick, C.J. Hawker, R.D. Miller, E. Huang, M. Toney, Z. Lin, R. Briber

**ACS** Spring National Meeting, Anaheim, CA, March 2004

Mechanical Properties of Nanoporous Organosilicate in the Pre-porous and Porous state

W. Volksen, H-C. Kim, T.P. Magbitang, V.Y. Lee, P. Brock, E.E. Simonyi, J.L. Hedrick, C.J. Hawker, R.D. Miller

**MRS** Spring National Meeting, San Francisco, CA, April 2004

Effect of Templating Byproducts on Adhesion of Nanoporous Dielectric Films

D. Maidenberg, R.H. Dauskardt, W. Volksen, R.D. Miller

**IITC**, San Francisco, CA, June 2003

Effect of Templating Byproducts on Adhesion of Nanoporous Dielectric Films

D. Maidenberg, R.H. Dauskardt, W. Volksen, R.D. Miller

**MRS** Spring National Meeting, San Francisco, CA, April 2003

Toughening of Nanoporous Glasses using Porogen Residuals

D. Maidenberg, R.H. Dauskardt, W. Volksen, R.D. Miller

**MRS** Fall National Meeting, Boston, Mass., Nov. 2003

Creating Nanoporosity by Selective Extraction of Porogens using SCCO<sub>2</sub>

R.D. Miller, W. Volksen, S. Ganopadhyay, T. Raghupalan, B. Lahiou, J.A. Lubguban, N. Biswas, C.T. Canogo, J. Sun, D. Huang, S.L. Simon

**MRS** Spring National Meeting, San Francisco, CA, April 2003

Advances in low-k and ultra low-k porous dielectrics: A Tutorial

W. Volksen

**VMIC** 2003, Marina del Rey, CA, Sept. 2003

Nanoporous Low Dielectric Constant Organosilicate Materials Based on Inorganic/Organic Polymer Blends

W. Volksen, R.D. Miller, J.L. Hedrick, C.J. Hawker, H-C. Kim, T.P. Magbitang, V.Y. Lee, L. Sundberg, M. Toney, P. Rice, K. Rodbell, E. Huang, S. Cohen, K. Lynn, M. Petkov, M. Weber, E.E. Simonyi

**MST 2002- 2<sup>nd</sup>** Int. Symp. On Polymers in Microelectronics, Orlando, FLA, Nov. 2002 (*invited*)

Recent Developments in Low-k, Nanoporous Organosilicate Dielectrics

W. Volksen

**DUMIC 2002**, Santa Clara, CA Feb. 2002 (*invited*)

Nanoporous, Low Dielectric Constant Organosilicate Materials Derived from Inorganic/Organic Polymer Blends

W. Volksen, R.D. Miller, J.L. Hedrick, C.J. Hawker, T.P. Magbitang, V.Y. Lee

**BPS 2001**, Bayreuth, Germany, Sept. 2001

Preparation and Characterization of Nanoporous Organosilicates

W. Volksen, J.L. Hedrick, R.D. Miller, C.J. Hawker, V.Y. Lee, T.P. Magbitang, M. Toney, P. Rice, E. Huang, K. Rodbell, K. Lynn, M. Weber, M. Petkov

**Silica 2001**, Mulhouse, France, Sept. 2001