

Letters

Organic thin film induced substrate restructuring: An STM study of the interaction of naphtho[2,3-a]pyrene Au(111) herringbone reconstruction

Erin V. Iski, April D. Jewell, Heather L. Tierney, Georgios Kyriakou, and E. Charles H. Sykes 040601

Articles

Comparison of methods to determine bandgaps of ultrathin HfO₂ films using spectroscopic ellipsometry

Ming Di, Eric Bersch, Alain C. Diebold, Steven Consiglio, Robert D. Clark, Gert J. Leusink, and Torsten Kaack 041001

Plasma Science and Technology

Structural and electrical characterization of HBr/O₂ plasma damage to Si substrate

Masanaga Fukasawa, Yoshinori Nakakubo, Asahiko Matsuda, Yoshinori Takao, Koji Eriguchi, Kouichi Ono, Masaki Minami, Fumikatsu Uesawa, and Tetsuya Tatsumi 041301

Measurement and simulation of spreading current in interlayer dielectric film deposition by plasma-enhanced chemical vapor deposition

Noriaki Matsunaga, Hirokatsu Okumura, Butsurin Jinnai, and Seiji Samukawa 041302

(Continued)

Journal of Vacuum Science & Technology A (ISSN: 0734-2101) is published six times annually (Jan/Feb, Mar/Apr, May/Jun, Jul/Aug, Sep/Oct, Nov/Dec) by AVS through the American Institute of Physics, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502. 2011 subscription rates are: US\$1520. POSTMASTER: Send address changes to *Journal of Vacuum Science & Technology A*, Membership Services, AVS, 125 Maiden Lane, 15th Floor, New York, NY 10038, membership@avs.org, www.avs.org. Periodicals postage paid at Huntington Station, NY 11746, and at additional mailing offices.

Membership in AVS includes \$17.50 from membership dues to be applied towards a subscription to *Journal of Vacuum Science & Technology A*.

Subscription Prices (2011)

| | U.S.A. and Poss. | Can., Mex., Central & S. America & Caribbean | Europe, Asia, Africa & Oceania* |
|---------------------------|------------------------|---|------------------------------------|
| JVST A ¹ | \$1570 | \$1630 | \$1680 |
| JVST A ² | \$1795 | \$1875 | \$1920 |
| JVST A and B ¹ | \$1795 | \$1925 | \$1995 |
| JVST A and B ² | \$1795 | \$1850 | \$1850 |
| JVST A and B ³ | \$2050 | \$2160 | \$2245 |

¹Print and online.

²Print, CD-ROM, and online.

³CD-ROM and online only.

*Nonmember subscriptions include air-freight service.

Back-Number Prices. 2011 single copy: \$186; prior to 2011 single copy: \$186.

Subscriptions, renewals, and address changes should be addressed to: for members: *Membership Services, AVS, 125 Maiden Lane, 15th Floor, New York, NY 10038, membership@avs.org, www.avs.org*; Institutional Subscribers, please submit to *AIP Subscription Fulfillment Division, AIP, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502*. Allow at least six weeks advance notice. For address changes please send both old and new addresses and, if possible, include a label from the plastic mailing wrapper of a recent issue. Missing issue requests will be honored only if received within six months of publication date (nine months for Australia and Asia).

Single-copy orders (current and back issues) should be addressed to American Institute of Physics, Circulation and Fulfillment Division, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502; Telephone: 800-344-6902 (or 516-576-2270 outside the U.S.A.), Fax at 516-349-9704, or E-mail at subs@aip.org.

Reprints: Reprints can be ordered with or without covers only in multiples of 50 from AIP, Circulation and Fulfillment/Reprints, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502; Telephone: 800-344-6909 (U.S. and Canada) or 516-576-2270.

Document Delivery: Copies of journal articles can be ordered for online delivery from DocumentStore, AIP's online document delivery service (<http://ojs.aip.org/documentstore/>).

Microform: *Journal of Vacuum Science & Technology A* is available on microfilm issued at the same frequency as the printed journal and annually on microfiche. Direct requests to AIP, Circulation and Fulfillment/Single Copy Sales, Suite 1NO1, 2 Huntington Quadrangle, Melville, NY 11747-4502; Fax 516-349-9704; Telephone: 800-344-6908 (U.S. and Canada) or 516-576-2270.

Online Access: The *Journal of Vacuum Science and Technology A* is available online to AVS members at no additional charge; for details, please see <http://ojs.aip.org/jvsta/>. Abstracts of journal articles are available from AIP's SPIN Web Service (<http://ojs.aip.org/spinweb/>).

Modeling of plasma-induced damage and its impacts on parameter variations in advanced electronic devices

Koji Eriguchi, Yoshinori Takao, and Kouichi Ono 041303

Surfaces

Surfaces of mixed formulation solder alloys at melting

M. J. Bozack, J. C. Suhling, Y. Zhang, Z. Cai, and P. Lall 041401

Observation of NH₂ species on tilted InN (0111) facets

A. R. Acharya, M. Buegler, R. Atalay, N. Dietz, B. D. Thoms, J. S. Tweedie, and R. Collazo 041402

Aging mechanism of the native oxide on silicon (100) following atmospheric oxygen plasma cleaning

Thomas S. Williams and Robert F. Hicks 041403

Thin Films

Plasma enhanced atomic layer deposition of SiN_x:H and SiO₂

Sean W. King 041501

Substrate effects on metal-insulator transition characteristics of rf-sputtered epitaxial VO₂ thin films

Yanjie Cui and Shriram Ramanathan 041502

Glancing angle deposition of Ge nanorod arrays on Si patterned substrates

C. Khare, R. Fechner, J. Bauer, M. Weise, and B. Rauschenbach 041503

Optical and electrical properties of transparent conducting B-doped ZnO thin films prepared by various deposition methods

Jun-ichi Nomoto, Toshihiro Miyata, and Tadatsugu Minami 041504

Simple self-gettering differential-pump for minimizing source oxidation in oxide-MBE environment

Yong-Seung Kim, Namrata Bansal, and Seongshik Oh 041505

Effects of thermal annealing on the microstructure of sputtered Al₂O₃ coatings

V. Edlmayr, T. P. Harzer, R. Hoffmann, D. Kiener, C. Scheu, and C. Mitterer 041506

Comparative study of low dielectric constant material deposited using different precursors

Bor-Jou Wei, Yi-Lung Cheng, Fu-Hsing Lu, Tai-Jung Chiu, and Han-Chang Shih 041507

Numerical ellipsometry: *n-k* plane analysis of transparent conducting films

D. Barton and F. K. Urban III 041508

Direct simulation Monte Carlo study of effects of thermal nonuniformities in electron-beam physical vapor deposition

A. Venkattraman and Alina A. Alexeenko 041509

Realization of uniform large-area pentacene thin film transistor arrays by roller vacuum thermal evaporation

Liangmin Wang, Dexing Li, Yuanyuan Hu, and Chao Jiang 041510

Optical transparency and electrical conductivity of nonstoichiometric ultrathin In_xO_y films

Shay Joseph and Shlomo Berger 041511

Plasma treatment of HfO₂-based metal-insulator-metal resistive memories

C. Vallée, P. Gonon, C. Mannequin, T. Chevolleau, M. Bonvalot, H. Grampeix, C. Licitra, N. Rochat, and V. Jousseume 041512

Study of stress in tensile nitrogen-plasma-treated multilayer silicon nitride films

Pierre Morin, Gaetan Raymond, Daniel Benoit, Denis Guiheux, Roland Pantel, Fabien Volpi, and Muriel Braccini 041513

Improving the quality of barrier/seed interface by optimizing physical vapor deposition of Cu Film in hollow cathode magnetron

A. Dulkin, E. Ko, L. Wu, I. Karim, K. Leeser, K. J. Park, L. Meng, and D. N. Ruzic 041514

(Continued)

Experimental results and numerical modeling of a high-performance large-scale cryopump.

I. Test particle Monte Carlo simulation

Xueli Luo, Christian Day, Horst Haas, and Stylianos Varoutis 041601

Influence of surface topography on *in situ* reflection electron energy loss spectroscopy plasmon spectra of AlN, GaN, and InN semiconductors

B. Strawbridge, N. Cernetic, J. Chapley, R. K. Singh, S. Mahajan, and N. Newman 041602

Precision vacuum pumping speed measurement using sonic nozzles

Wan-Sup Cheung, Jin-Hyun Shin, Kyung-Am Park, and Jong-Yeon Lim 041603

CUMULATIVE AUTHOR INDEX A15

On The Cover: Liangmin Wang, Dexing Li, Yuanyuan Hu, and Chao Jiang, Realization of uniform large-area pentacene thin film transistor arrays by roller vacuum thermal evaporation, *Journal of Vacuum Science & Technology, A* **29**(4), Figure 6, p. 041510-4 (2011). Cover shows a photograph of the OTFT arrays on a flexible PET sheet of $100 \times 100 \text{ mm}^2$ in size with channel length and width of 50 and 2000 μm , respectively. The OTFT arrays showing an average saturation mobility of $0.42 \pm 0.04 \text{ cm}^2/\text{Vs}$, were fabricated by a novel roller-vacuum thermal evaporation system having a mobile sample holder which travels in a multidimensional movement, e.g. moving back and forth while keeping self-rotating around the cylindrical axis.