Front Matter: Volume 6984


Event: Sixth International Conference on Thin Film Physics and Applications, 2007, Shanghai, China
Sixth International Conference on
Thin Film Physics and Applications

Wenzhong Shen
Junhao Chu
Editors

25–28 September 2007
Shanghai, China

Organized and Sponsored by
Department of Physics, Shanghai Jiao Tong University (China)
The National Natural Science Foundation of China (China)
Chinese Physical Society (China)
Shanghai Physical Society (China)

Published by
SPIE
The papers included in this volume were part of the technical conference cited on the cover and title page. Papers were selected and subject to review by the editors and conference program committee. Some conference presentations may not be available for publication. The papers published in these proceedings reflect the work and thoughts of the authors and are published herein as submitted. The publisher is not responsible for the validity of the information or for any outcomes resulting from reliance thereon.

Please use the following format to cite material from this book:


ISSN 0277-786X
ISBN 9780819471826

Published by
SPIE
P.O. Box 10, Bellingham, Washington 98227-0010 USA
Telephone +1 360 676 3290 (Pacific Time) · Fax +1 360 647 1445
SPIE.org

Copyright © 2008, Society of Photo-Optical Instrumentation Engineers

Copying of material in this book for internal or personal use, or for the internal or personal use of specific clients, beyond the fair use provisions granted by the U.S. Copyright Law is authorized by SPIE subject to payment of copying fees. The Transactional Reporting Service base fee for this volume is $18.00 per article (or portion thereof), which should be paid directly to the Copyright Clearance Center (CCC), 222 Rosewood Drive, Danvers, MA 01923. Payment may also be made electronically through CCC Online at copyright.com. Other copying for republication, resale, advertising or promotion, or any form of systematic or multiple reproduction of any material in this book is prohibited except with permission in writing from the publisher. The CCC fee code is 0277-786X/08/$18.00.

Printed in the United States of America.

Publication of record for individual papers is online in the SPIE Digital Library.

SPIEDigitalLibrary.org

Paper Numbering: Proceedings of SPIE follow an e-First publication model, with papers published first online and then in print and on CD-ROM. Papers are published as they are submitted and meet publication criteria. A unique, consistent, permanent citation identifier (CID) number is assigned to each article at the time of the first publication. Utilization of CIDs allows articles to be fully citable as soon they are published online, and connects the same identifier to all online, print, and electronic versions of the publication. SPIE uses a six-digit CID article numbering system in which:

- The first four digits correspond to the SPIE volume number.
- The last two digits indicate publication order within the volume using a Base 36 numbering system employing both numerals and letters. These two-number sets start with 00, 01, 02, 03, 04, 05, 06, 07, 08, 09, 0A, 0B ... 02, followed by 10-12, 20-22, etc.

The CID number appears on each page of the manuscript. The complete citation is used on the first page, and an abbreviated version on subsequent pages. Numbers in the index correspond to the last two digits of the six-digit CID number.
### SESSION 1  PHYSICS OF THIN FILMS

<table>
<thead>
<tr>
<th>Paper Number</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6984 02</td>
<td>The structure and dielectrics of epitaxially strained BaRO$_3$ (R=Ti, Zr) thin films [6984-01]</td>
<td>J. Tang, J. Zhu, J. Xiong, W. Qin, Y. Li, Univ. of Electronic Science and Technology of China (China)</td>
</tr>
<tr>
<td>6984 03</td>
<td>Stress effect on electronic characteristics in heterojunction of (n')nanocrystalline/ (p')crystalline Si [6984-02]</td>
<td>W. Wei, Wenzhou Univ. (China)</td>
</tr>
<tr>
<td>6984 04</td>
<td>Evaluation of carrier density distribution and population inversion caused by $\Gamma$—$\chi$ scattering in GaAs/AlAs multi-quantum wells [6984-03]</td>
<td>H. Kitamura, S. Hiratsuka, Doshisha Univ. (Japan); M. Hosoda, Osaka City Univ. (Japan); N. Ohtani, Doshisha Univ. (Japan)</td>
</tr>
<tr>
<td>6984 05</td>
<td>Phase diagrams and in-plane anisotropic misfit strains of (110)Ba$<em>{0.6}$Sr$</em>{0.4}$TiO$_3$ thin films grown on (001) orthorhombic NdGaO$_3$ substrate [6984-04]</td>
<td>P. F. Liu, X. J. Meng, J. L. Sun, J. H. Ma, J. H. Chu, Shanghai Institute of Technical Physics (China)</td>
</tr>
<tr>
<td>6984 06</td>
<td>The first-principles study of Al adsorption on Si(001)2×1 [6984-05]</td>
<td>C. B. Feng, Z. Q. Ma, F. Hong, Y. H. Li, Shanghai Univ. (China)</td>
</tr>
<tr>
<td>6984 07</td>
<td>Pulsed-laser deposition of thin Fe film on Cu(100): a kinetic Monte Carlo simulation [6984-06]</td>
<td>J. Hu, F. Wu, Y. Fang, Zhejiang Normal Univ. (China)</td>
</tr>
<tr>
<td>6984 08</td>
<td>Evaluation of subband energy in TPD/DCM organic multiple quantum wells [6984-07]</td>
<td>T. Takayuki, M. Murata, M. Haishi, Doshisha Univ. (Japan); T. Ando, Hamamatsu Photonics (Japan); N. Ohtani, Doshisha Univ. (Japan)</td>
</tr>
<tr>
<td>6984 09</td>
<td>Synthesis and characterization of SiO$_2$ capped ZnCdS nanocrystals [6984-08]</td>
<td>G. Yang, D. Li, X. Zhu, Z. Xu, Y. Wang, Shanghai Univ. (China)</td>
</tr>
<tr>
<td>6984 0A</td>
<td>Luminescence of rhodamine B doped in silica films by evaporation-induced self-assembly [6984-09]</td>
<td>L. Yao, F. Lu, C. Yue, F. Xie, F. Guan, Univ. of Shanghai for Science and Technology (China)</td>
</tr>
<tr>
<td>Session 2</td>
<td>Thin Film Materials</td>
<td></td>
</tr>
<tr>
<td>----------</td>
<td>---------------------</td>
<td></td>
</tr>
</tbody>
</table>
| 6984 0C  | Temperature dependence of optical properties in AlInN thin films [6984-11]  
L. F. Jiang, W. Z. Shen, Shanghai Jiao Tong Univ. (China); H. Ogawa, Q. X. Guo, Saga Univ. (Japan)  
| 6984 0D  | Weak localization in indium nitride films [6984-12]  
X. Z. Yu, Z. Z. Jiang, Y. Yang, W. Pan, W. Z. Shen, Shanghai Jiao Tong Univ. (China)  
| 6984 0E  | High density Si nanodots: fabrication and properties (Invited Paper) [6984-13]  
J. Xu, J. Zhou, X. Li, Z. Cen, D. Chen, W. Li, L. Xu, Z. Ma, K. Chen, Nanjing Univ. (China)  
| 6984 0F  | Structural, electronic, and optical properties of MnSi [6984-14]  
Y. Gao, R. S. Chen, M. Y. Zhou, Hubei Univ. (China); M. A. Lourenco, K. P. Homewood, Univ. of Surrey (United Kingdom); G. Shao, Univ. of Bolton (United Kingdom)  
| 6984 0G  | The blue-shift effect of the ion-milling-formed HgCdTe photodiodes [6984-15]  
F. X. Zha, Shanghai Univ. (China); J. Shao, National Lab. for IR Physics (China)  
| 6984 0H  | Simultaneous double-sided deposition of long-length epitaxial CeO$_2$ buffer layers for YBCO coated conductors [6984-16]  
J. Xiong, W. Qin, J. Tang, B. Tao, X. Han, Y. Li, Univ. of Electronic Science and Technology of China (China)  
| 6984 0I  | Epitaxial growth and electrical properties of Ba$_{0.6}$Sr$_{0.4}$TiO$_3$ thin films with conductive La$_{0.5}$Sr$_{0.5}$CoO$_3$ bottom electrodes [6984-17]  
W. F. Qin, J. Xiong, J. Zhu, J. L. Tang, W. B. Luo, X. H. Wei, Y. Zhang, Y. R. Li, Univ. of Electronic Science and Technology of China (China)  
| 6984 0J  | Synthesis, structure, and properties of Cu doped Bi$_4$V$_2$O$_{11}$ via EDTA-citrate gel process [6984-18]  
M. Guo, East China Normal Univ. (China); H. Deng, Shanghai Univ. (China); P. Yang, East China Normal Univ. (China)  
| 6984 0K  | Epitaxial growth and thermal dynamics of CeO$_2$ buffer layer on textured Ni-W substrates for YBCO coated conductors [6984-19]  
| 6984 0L  | Electric field assisted low-temperature growth of SiGe on insulating films for future TFT [6984-20]  
M. Miyao, H. Kanno, T. Sadoh, Kyushu Univ. (Japan)  
| 6984 0M  | Surface morphology of (100)ZnTe: P layer homoepitaxially grown by horizontal MOVPE technique [6984-21]  
K. Yamaguchi, Y. Kuramitsu, K. Saito, T. Tanaka, M. Nishio, Q. Guo, H. Ogawa, Saga Univ. (Japan)  
| 6984 0N  | Synthesis of functionalized ZnS:Mn/ZnS nanocrystals [6984-22]  
D. Li, Y. Wang, G. Yang, Z. Xu, Shanghai Univ. (China)  
|
A study on the properties of ramie fabrics modified by plasma [6984-23]
Z. Wang, Y. He, Guangxi Univ. for Nationalities (China); Y. Ma, J. Luo, Guangxi Research Institute of Silk-Ramie Textile Science (China); Y. Zhao, G. Qin, C. Liao, Guangxi Univ. for Nationalities (China)

Structural investigation and barrier properties of a-C:H thin films on polymer by PECVD [6984-24]
Y. Zhang, X. Bian, Q. Chen, Y. Wang, G. Zhang, Y. Ge, Beijing Institute of Graphic Communication (China)

The structural properties of O and B-O ion implanted diamond films [6984-25]
X. J. Hu, Zhejiang Univ. of Technology (China); J. S. Ye, Hangzhou Iron and Steel Group Corp. (China); Q. S. Lu, G. Q. Zheng, Zhejiang Univ. of Technology (China)

Preparation and characterization of multiferroic CoFe$_2$O$_4$-Pb(Zr$_{0.53}$Ti$_{0.47}$)O$_3$ composite films [6984-26]

Fabrication and physical properties of high-quality zinc oxide thin films [6984-27]
B. Zhou, J. Wang, Y. Pan, L. Wang, H. Peng, Beihang Univ. (China)

The effect of sol concentration on 0.6BiFeO$_3$-0.4PbTiO$_3$ thin films prepared by sol-gel method [6984-28]
J. Cai, S. Yu, J. Cheng, Y. Lu, Z. Meng, Shanghai Univ. (China)

Electrical and optical properties of Na$^+$-doped ZnO thin films prepared by sol-gel method [6984-29]
Y. Li, Shanghai Univ. (China); C. Lin, Shanghai Institute of Materials (China); X. Zhou, J. Ma, X. Zhu, Shanghai Univ. (China)

Nitrogen incorporation characteristics of 4H-SiC epitaxial layer [6984-30]
R. Jia, Y. Zhang, Y. Zhang, Y. Wang, Xidian Univ. (China)

Thickness impact of aluminum and silicon on bow of silicon solar cells [6984-31]
L. Zhang, W. Wu, M. Li, Q. Su, Y. H. Zhang, Z. Q. Ma, Shanghai Univ. (China)

Parameter optimization of silicon solar cell back surface field (BSF) formation [6984-32]

Investigation of copper phthalocyanine based Schottky solar cells [6984-33]
Y. Zhang, W. Shi, Y. Guo, L. Wang, G. Wei, Shanghai Univ. (China)

Annealing effects on exciton localization in GaNAs/GaAs epilayer [6984-34]
Z. L. Liu, P. P. Chen, L. L. Ma, Shanghai Institute of Technical Physics (China); C. Wang, Yunnan Univ. (China); J. Shao, X. S. Chen, W. Lu, Shanghai Institute of Technical Physics (China)

Effect of annealing temperature on the structural and optical properties of Al-doped ZnO films by RF magnetron sputtering [6984-35]
Y. Wu, B. Huang, L. Zhang, S. Wu, Xiamen Univ. (China)
Investigation on the mechanical properties of P-doped nc-Si:H films [6984-36]  
L. Wang, J. Wang, J. Lin, B. Zhou, H. Peng, Beihang Univ. (China)

Optical properties of Li$_2$B$_4$O$_7$ polycrystalline films prepared by screen-painting method [6984-37]  
L. Jia, Q. Wang, J. Jian, Y. Sun, F. Shang, Xinjiang Univ. (China)

Size dependence of tunneling magnetoresistance in self-assembled nanoparticle arrays [6984-38]  
Y. Yang, Y. Lin, C. Wu, Q. Feng, Z. Huang, Fujian Normal Univ. (China)

Growth of highly (h00) oriented barium strontium titanate films on silicon substrates using conducting LaNiO$_3$ electrode [6984-39]  
Y. H. Gao, J. H. Ma, J. L. Sun, X. J. Meng, J. H. Chu, Shanghai Institute of Technical Physics (China)

Preparation and photoelectric properties of ZnPc-PPV/TAZnPc films [6984-40]  
J. Zhang, Shanghai Univ. (China); Y. Shen, Shanghai Univ. (China) and Shanghai Institute of Technical Physics (China); F. Gu, F. Zheng, J. Zhang, Shanghai Univ. (China)

Spectroscopic ellipsometry measurement and simulation of mesoporous TiO$_2$ multilayer films [6984-41]  
L. Huang, Shanghai Univ. (China); Y. Shen, Shanghai Univ. (China) and Shanghai Institute of Technical Physics (China); F. Gu, X. Xu, J. Zhang, Shanghai Univ. (China)

Structural, electrical, and optical characterization of nanocrystalline diamond films deposited by HFCVD method [6984-42]  
Y. Jin, Shanghai Univ. (China) and Shanghai Jiangong Material Huangang Ready-Mixed Concrete Co., Ltd. (China); L. Wang, J. Liu, J. Huang, R. Xu, W. Shi, Y. Xia, Shanghai Univ. (China)

Influence of substrates on the nucleation behaviour of nanocrystalline diamond films [6984-43]  
J. Xu, Y. Xia, L. Wang, J. Liu, J. Huang, H. Pen, G. Hu, X. Zhu, Shanghai Univ. (China)

Ellipsometric study of CVD diamond films prepared with various grain sizes [6984-44]  
Y. Lou, L. Wang, H. Ma, H. Deng, B. Lu, Y. Xia, Shanghai Univ. (China)

Effect of heat treatment on the property of CuInS$_2$ thin film prepared by chemical bath deposition [6984-45]  
F. Cui, L. Wang, X. Chen, X. Sheng, D. Yang, Zhejiang Univ. (China); Y. Sun, Nankai Univ. (China)

Properties of compositionally graded (Pb,Sr)TiO$_3$ thin films for tunable microwave device application [6984-46]  

Fabrication and properties study of Cu(In$_{1-x}$Ga$_x$)Se$_2$ films by vacuum evaporation [6984-47]  
A. Li, J. Qin, W. Shi, G. Wei, Shanghai Univ. (China)
Influence of DC Joule heating treatment on the GMI effect in Fe-Co-Nb-Si-B ribbons

Q. Man, Y. Fang, H. Sun, F. Ye, Zhejiang Normal Univ. (China)

Sol-gel preparation and characterization of transparent GdTaO₄: Eu³⁺ thick films

K. Han, M. Gu, X. Liu, C. Ni, S. Huang, B. Liu, Tongji Univ. (China)

Fabrication and photoluminescence properties of ST-401 plastic scintillation films

M. Gu, L. You, X. Liu, C. Ni, S. Huang, B. Liu, Tongji Univ. (China)

Pockels effect in GaN/AlₓGa₁₋ₓN superlattice with different quantum structures

P. Chen, Institute of Semiconductors (China); S. P. Li, Xiamen Univ. (China); X. G. Tu, Y. H. Zuo, L. Zhao, S. W. Chen, Institute of Semiconductors (China); J. C. Li, W. Lin, H. Y. Chen, D. Y. Liu, J. Y. Kang, Xiamen Univ. (China); Y. D. Yu, Institute of Semiconductors (China); J. Z. Yu, Q. M. Wang, Institute of Semiconductors (China) and Xiamen Univ. (China)

Structures and optical properties of indium doped SrTiO₃ thin films by oxygen plasma-assisted pulsed laser deposition

Y. Zhang, Shanghai Institute of Ceramics (China) and Graduate School of the Chinese Academy of Sciences (China); X. Li, W. Yu, X. Gao, Shanghai Institute of Ceramics (China); F. Wu, Shanghai Institute of Ceramics (China) and Graduate School of the Chinese Academy of Sciences (China); J. Kong, W. Shen, Shanghai Jiao Tong Univ. (China)

Fluorescent polymeric nanoparticles fabricated by plasma polymerization under atmospheric pressure and room temperature

P. Yang, J. Zhang, Y. Guo, Donghua Univ. (China)

Correlation between crystalline qualities and resistive switching effects of La₀.₇Sr₀.₃MnO₃ films

F. Wu, Shanghai Institute of Ceramics (China) and Graduate School of the Chinese Academy of Sciences (China); X. Li, W. Yu, X. Gao, Shanghai Institute of Ceramics (China); Y. Zhang, X. Cao, Shanghai Institute of Ceramics (China) and Graduate School of the Chinese Academy of Sciences (China)

Effects of TiO₂ buffer layers on the dielectric and tunable properties of Ba₀.₄Sr₀.₆TiO₃ thin films prepared by pulsed laser deposition

J. Gong, J. Cheng, S. Yu, W. Wu, Z. Meng, Shanghai Univ. (China)

Study of lithium diffusion through vanadium pentoxide aerogel


The synthesis and property of nano-SnO₂ thin film by sol-gel

S. Qin, Z. Tong, M. Guo, East China Normal Univ. (China); H. Deng, Shanghai Univ. (China); P. Yang, East China Normal Univ. (China)

Infrared dielectric properties of BaTiO₃ ultrathin films

S. J. Liu, Shanghai Normal Univ. (China) and Shanghai Institute of Technical Physics (China); X. Y. Zhao, G. Pan, G. F. Su, Shanghai Normal Univ. (China); Z. M. Huang, J. H. Chu, Shanghai Institute of Technical Physics (China)
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>6984 1O</td>
<td><strong>MOS capacitance properties of silicon-based PZT thin films</strong></td>
<td>X. Zhang, East China Normal Univ. (China); M. Shi, Shanghai Univ. (China); S. Qin, M. Guo, East China Normal Univ. (China); H. Deng, Shanghai Univ. (China); P. Yang, East China Normal Univ. (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1P</td>
<td><strong>Influence of substrate temperature on properties of tin sulfide thin films</strong></td>
<td>Y. Guo, W. Shi, Y. Zhang, L. Wang, G. Wei, Shanghai Univ. (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1Q</td>
<td><strong>Investigations on Sb$_2$O$_3$ doped-SnS thin films prepared by vacuum evaporation</strong></td>
<td>Y. Guo, W. Shi, Y. Zhang, L. Wang, G. Wei, Shanghai Univ. (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1R</td>
<td><strong>Magnetic behavior of Fe-based nanostructures combined with the ordered porous Al$_2$O$_3$ film</strong></td>
<td>C. You, J. Zhang, Z. Song, H. Yan, B. Yu, Y. Shen, Shanghai Univ. (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1S</td>
<td><strong>Growth and characterization of AlN thin films on free-standing diamond substrates</strong></td>
<td>J. Huang, Y. Xia, L. Wang, J. Liu, J. Xu, G. Hu, X. Zhu, Shanghai Univ. (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1T</td>
<td><strong>Growth and characterization of Li-doped ZnO thin films on nanocrystalline diamond substrates</strong></td>
<td>J. Huang, Y. Xia, L. Wang, J. Xu, G. Hu, X. Zhu, W. Shi, Shanghai Univ. (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1U</td>
<td><strong>Effects of high magnetic field on the properties of hot-filament CVD diamond films</strong></td>
<td>J. Huang, H. Peng, R. Xu, J. Xu, J. Liu, L. Wang, Y. Xia, Shanghai Univ. (China)</td>
<td></td>
</tr>
</tbody>
</table>

**SESSION 3 TECHNOLOGY OF THIN FILMS**

<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>6984 1V</td>
<td><strong>New approach to formation of nanopore on SOI: SiC/Si heteroepitaxial growth by supersonic jet CVD (Invited Paper)</strong></td>
<td>Y. Ikoma, K. Ono, M. Uenuma, T. Ogata, T. Motooka, Kyushu Univ. (Japan)</td>
<td></td>
</tr>
<tr>
<td>6984 1X</td>
<td><strong>Fabrication and optical properties of ferroelectric microcavities fabricated by chemical solution deposition (Invited Paper)</strong></td>
<td>N. Dai, G. J. Hu, X. K. Hong, J. L. Shang, Shanghai Institute of Technical Physics (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1Y</td>
<td><strong>The effects of buffer layers on the growth of smooth relaxed SiGe thin films</strong></td>
<td>S. Zheng, China Univ. of Petroleum Beijing (China)</td>
<td></td>
</tr>
<tr>
<td>6984 1Z</td>
<td><strong>Highly (h00) oriented growth of SrTiO$_3$ thin films on Si(100) substrates by RF magnetron sputtering and their optical properties</strong></td>
<td>J. H. Ma, J. H. Pin, Z. M. Huang, Y. H. Gao, T. Lin, F. W. Shi, J. L. Sun, J. H. Chu, Shanghai Institute of Technical Physics (China)</td>
<td></td>
</tr>
<tr>
<td>6984 20</td>
<td><strong>The role of ion-assisted deposition in PVD</strong></td>
<td>Z. Q. Ma, C. B. Feng, X. Tang, F. Li, B. He, B. B. Shi, Shanghai Univ. (China)</td>
<td></td>
</tr>
</tbody>
</table>
6984 21 Synthesis of ordered ZnO nanorod film on ITO substrate using hydrothermal method [6984-72]
X. Tang, Z. Q. Ma, W. G. Zhao, D. M. Wang, Shanghai Univ. (China)

6984 22 Effect of working pressure on the properties of Al2O3/MgF2 HR coatings prepared by electron beam evaporation [6984-73]
M. Zhan, Z. Wu, Shanghai Second Polytechnic Univ. (China); J. Shao, Shanghai Institute of Optics and Fine Mechanics (China)

6984 23 Study of the defects in GaN epitaxial films grown on sapphire by HVPE [6984-74]
Z. Liu, Nanjing Univ. (China) and Nanjing Univ. of Information Science & Technology (China); X. Xiu, L. Chen, R. Zhang, Z. Xie, P. Han, Y. Shi, S. Gu, Y. Zheng, Nanjing Univ. (China)

6984 24 PTFE nanocrystallines by oriented plasma polymerization at atmospheric pressure [6984-75]
Y. Guo, J. Zhang, J. Xu, R. Zhou, J. Yu, Donghua Univ. (China)

6984 25 Nano-particulate coating on cotton fabric through DBD [6984-76]
Y. Guo, J. Zhang, J. Xu, R. Zhou, J. Yu, Donghua Univ. (China)

6984 26 Fabrication and characterization of Si nanotip arrays for Si-based nano-devices [6984-77]
X. Zhang, K. Liu, K. Chen, J. Xu, Z. Ma, W. Li, L. Xu, X. Huang, Nanjing Univ. (China)

6984 27 Quantification of substrate cleanliness level based on thin film adhesion measurement [6984-78]
Y. Tsukamoto, Ashikaga Institute of Technology (Japan)

6984 28 Fabrication kinetics and properties of Ni-based nano-arrays embedded in anodic Al2O3 film [6984-79]
H. Yan, J. Zhang, C. You, Z. Song, B. Yu, Y. Shen, Shanghai Univ. (China)

6984 29 The effect of bias voltage on the morphology and wettability of plasma deposited titanium oxide films [6984-80]
W. Liu, Y. Li, K. Guo, J. Zhang, Donghua Univ. (China)

6984 2A Influence of annealing temperature on microstructures and resistivity of Fe$_x$Al$_{1-x}$ films [6984-81]
S. Yang, Z. Liao, Z. Liu, Sichuan Univ. (China); W. Wu, China Academy of Engineering Physics (China); D. Wu, T. Lu, Sichuan Univ. (China); L. Zhang, Y. Tang, China Academy of Engineering Physics (China)

6984 2B The influence of the substrate temperature variation on Fe$_x$Al$_{1-x}$ thin films deposition [6984-82]
Z. Liu, Z. Liao, S. Yang, Sichuan Univ. (China); W. Wu, China Academy of Engineering Physics (China); D. Wu, T. Lu, Sichuan Univ. (China); L. Zhang, Y. Tang, China Academy of Engineering Physics (China)

6984 2C Effect of LaNiO$_3$ sol concentration on the structure and dielectric properties of Pb(Zr$_{0.53}$Ti$_{0.47}$)O$_3$ thin films grown on LaNiO$_3$ coated Ti substrates [6984-83]
X. Yang, J. Cheng, S. Yu, Z. Meng, Shanghai Univ. (China)
Characteristics of the composite films formed by CdTe electrodeposited on the ordered porous Al₂O₃ [6984-84]
Z. Song, J. Zhang, C. You, H. Yan, B. Yu, Y. Shen, Shanghai Univ. (China)

Characteristic of ZnO films prepared by the sol-gel process [6984-85]
G. He, B. Huang, S. Wu, J. Li, Xiamen Univ. (China)

Voltage-controlled change of MIS reflectivity in visible and near infrared band [6984-86]
J. H. Qin, J. H. Ma, Z. M. Huang, J. H. Chu, Shanghai Institute of Technical Physics (China)

Crystallization of manganese cobalt nickelate films prepared by chemical deposition [6984-87]
Y. Ge, Z. Huang, Y. Hou, T. Li, J. Chu, Shanghai Institute of Technical Physics (China)

The structural and electrochemical properties of tin oxide films prepared by RF magnetron sputtering [6984-88]
M. Cai, J. Song, L. Zhang, Q. Wu, S. Wu, Xiamen Univ. (China)

Study of final polishing slurry for silicon substrate in ULSI [6984-89]
W. Di, M. Yang, Shijiazhuang Railway Institute (China); Y. Liu, Hebei Univ. of Technology (China)

Substrate effect on the growth and thermal electrical properties of vanadium oxide thin films [6984-90]
X. Wei, Z. Wu, X. Xu, T. Wang, J. Tang, Y. Jiang, Univ. of Electronic Science and Technology of China (China)

Influence of substrate temperature on the morphology and thermal resistance of vanadium oxide thin films [6984-91]
X. Wei, Z. Wu, T. Wang, X. Xu, J. Tang, Y. Jiang, Univ. of Electronic Science and Technology of China (China)

Properties of homoepitaxial 4H-SiC and characteristics of Ti/4H-SiC Schottky barrier diodes [6984-92]
G. Chen, Nanjing Univ. (China) and Nanjing Electronic Devices Institute (China); Z. Y. Li, S. Bai, Nanjing Electronic Devices Institute (China); P. Han, Nanjing Univ. (China)

CVD growth of Ge films on graded Si_{x}Ge_{1-x} buffers [6984-93]
R. H. Wang, P. Han, Q. Mei, J. Wu, R. P. Ge, Z. L. Xie, X. Q. Xiu, S. L. Gu, Y. Shi, R. Zhang, Y. D. Zheng, Nanjing Univ. (China)

MOCVD growth and annealing characteristics of Mg-doped AlGaN films [6984-94]
J. Yao, P. Han, Z. L. Xie, B. Liu, R. Zhang, R. L. Jiang, Q. J. Liu, F. Xu, Nanjing Univ. (China); H. M. Gong, Shanghai Institute of Technical Physics (China); Y. Shi, Y. D. Zheng, Nanjing Univ. (China)

The study of ZnO thin film fabricated by low temperature wet chemical method and its optical properties [6984-95]
S. Wu, W. Sang, B. Wang, Y. Zhao, J. Min, Y. Lu, Shanghai Univ. (China)
<table>
<thead>
<tr>
<th>Session</th>
<th>Title</th>
<th>Authors</th>
</tr>
</thead>
<tbody>
<tr>
<td>6984 2P</td>
<td>Study of Si/SiO₂ hybrid antireflective coatings on SLD prepared by DSEBET [6984-96]</td>
<td>M. X. Sun, M. Q. Tan, M. Zhao, Institute of Semiconductors (China)</td>
</tr>
<tr>
<td>6984 2Q</td>
<td>Simulation of SiC deposition in a hot wall CVD reactor [6984-97]</td>
<td>W. Jia, Y. Zhang, Y. Zhang, R. Jia, H. Guo, Xidian Univ. (China)</td>
</tr>
<tr>
<td>6984 2R</td>
<td>Wurtzite structure high Mg content ZnMgO thin films deposited by oxygen-plasma enhanced pulsed laser deposition [6984-98]</td>
<td>Y. Gu, X. Li, Shanghai Institute of Ceramics (China); J. F. Kong, Shanghai Jiao Tong Univ. (China); C. Yang, Shanghai Institute of Ceramics (China); W. Z. Shen, Shanghai Jiao Tong Univ. (China); Y. W. Zhang, W. D. Yu, X. D. Gao, Shanghai Institute of Ceramics (China)</td>
</tr>
<tr>
<td>6984 2S</td>
<td>Thick and adherent (cBN/nano-diamond)₃ multilayer films deposited by RF magnetron sputtering [6984-99]</td>
<td>H. Q. Li, Hefei Univ. of Technology (China); K. M. Leung, W. J. Zhang, City Univ. of Hong Kong (Hong Kong China)</td>
</tr>
<tr>
<td>6984 2T</td>
<td>The properties of ZnO thin films fabricated by ion beam sputtering and RF magnetron sputtering [6984-100]</td>
<td>X. X. He, H. Q. Li, J. B. Gu, S. B. Wu, B. Cao, Hefei Univ. of Technology (China)</td>
</tr>
<tr>
<td>6984 2U</td>
<td>Photocurrent generated by nanometer silicon crystallites [6984-101]</td>
<td>R. Zhang, Shanghai Maritime Univ. (China) and Shanghai Jiao Tong Univ. (China); X. Y. Chen, W. Z. Shen, Shanghai Jiao Tong Univ. (China)</td>
</tr>
<tr>
<td>6984 2V</td>
<td>MOCVD growth of GaN films on Si-rich SiN₆ nanoisland patterned sapphire [6984-102]</td>
<td>Z. Fang, S. Li, J. Kang, Xiamen Univ. (China)</td>
</tr>
<tr>
<td>6984 2W</td>
<td>Study of the electrodeposition of self-assembled ZnO-surfactant hybrid thin films [6984-103]</td>
<td>X. Gan, Shanghai Institute of Ceramics (China) and Graduate School of the Chinese Academy of Sciences (China); X. Gao, X. Li, Shanghai Institute of Ceramics (China)</td>
</tr>
<tr>
<td>6984 2X</td>
<td>Characterization of (001)-orientated polycrystalline α-HgI₂ films grown by hot wall physical vapor deposition [6984-104]</td>
<td>Y. Zheng, W. Shi, G. Wei, J. Qin, S. Chen, L. Wang, Y. Xia, Shanghai Univ. (China)</td>
</tr>
<tr>
<td>6984 2Y</td>
<td>Preparation of polycrystalline HgI₂ films by PVD method under ultrasonic wave [6984-105]</td>
<td>Y. Zheng, W. Shi, G. Wei, J. Qin, S. Chen, L. Wang, Y. Xia, Shanghai Univ. (China)</td>
</tr>
<tr>
<td>6984 2Z</td>
<td>Investigation of nanostructure on silicon by electrochemical etching [6984-106]</td>
<td>L. Xu, J. You, East China Normal Univ. (China); L. Wang, East China Normal Univ. (China) and State Key Lab. of Transducer Technology (China)</td>
</tr>
</tbody>
</table>
SESSION 4  APPLICATIONS OF THIN FILMS

6984 31  Photon upconversion devices for imaging (Invited Paper) [6984-108]
H. C. Liu, H. Luo, National Research Council Canada (Canada); D. Ban, Univ. of Waterloo (Canada); M. Buchanan, Z. R. Wasilewski, A. J. Springthorpe, P. J. Poole, National Research Council Canada (Canada)

6984 32  Ultraviolet-to-infrared dual-band detectors based on quantum dot and heterojunction structures (Invited Paper) [6984-109]
A. G. U. Perera, Georgia State Univ. (USA)

6984 33  Extreme ultraviolet multilayer mirrors for astronomical observation (Invited Paper) [6984-110]
Z. Wang, J. Zhu, R. Chen, J. Xu, F. Wang, Z. Zhang, W. Wu, L. Liu, H. Zhang, D. Xu, H. Jiang, L. Chen, Tongji Univ. (China); H. Zhou, T. Huo, Univ. of Science and Technology of China (China); M. Cui, Y. Zhao, Institute of High Energy Physics (China)

6984 34  Surface properties and field emission of BN and BCN films (Invited Paper) [6984-111]
T. Sugino, C. Kimura, H. Aoki, Osaka Univ. (Japan)

6984 35  High-performance AlGaN-GaN HEMT materials and devices grown and fabricated on Si substrates [6984-112]
Z. H. Feng, J. Y. Yin, F. P. Yuan, B. Liu, Z. Feng, S. J. Cai, Hebei Semiconductor Research Institute (China)

6984 36  Single dipole mode photonic crystal laser on InGaAsP/InP QW waveguide slab [6984-113]

6984 37  Mode analysis of photonic crystal polarization beam splitter and its application in integrated circuit design [6984-114]

6984 38  The whispering gallery mode in photonic crystal ring cavity [6984-115]

6984 39  Effects of oxygen partial pressure on the resistance switching properties of La$_{0.7}$Ca$_{0.3}$MnO$_3$ thin films prepared by pulsed laser deposition method [6984-116]
W. Yu, X. Li, F. Wu, D. Shang, L. Chen, Shanghai Institute of Ceramics (China)

6984 3A  Preparation of Pd doped WO$_3$ films via sol-gel method and their gasochromic properties [6984-117]

6984 3B  Coherent amplification by multilayer nematic liquid crystal cell [6984-118]
X. Sun, Y. Pei, F. Yao, Harbin Institute of Technology (China)

6984 3C  Study on the photoinduced current in nematic liquid crystal cell with alkanethiol self-assembled monolayer [6984-119]
F. Yao, Y. Pei, X. Sun, Harbin Institute of Technology (China)
Multi-layer antireflection coatings for silicon solar cells using a sol-gel technique [6984-120]
B. B. Shi, Z. Q. Ma, X. Tang, C. B. Feng, Shanghai Univ. (China)

Research of diamond-like carbon (DLC) films: promising candidate for absorber layer of solar cells [6984-121]
M. Zhang, X. Cheng, C. Chen, Xiamen Univ. (China)

Ohmic contacts with heterojunction structure to N-type 4H-silicon carbide by N+ polysilicon film [6984-122]
H. Guo, Q. Feng, Xidian Univ. (China); D. Qiao, Northwestern Polytechnical Univ. (China); Y. Zhang, Y. Zhang, Xidian Univ. (China)

Tunable microwave band-stop filters using ferromagnetic resonance [6984-123]
B. Zhao, Y. Shi, H. Zhong, H. Wang, Univ. of Electronic Science and Technology of China (China)

Design and properties of STW resonators on AT-quartz [6984-124]
H. Wang, Y. Shi, H. Zhong, X. Jiang, Univ. of Electronic Science and Technology of China (China)

Research on the realization of high precision RC array through IC thin film technology [6984-125]
F. Sun, Harbin Institute of Technology (China); W. Jiang, D. Wu, S. Zhang, Heilongjiang Bada Universal Semiconductor Inc. (China)

Photovoltaic properties of near-infrared absorbing manganese (II) phthalocyanine sensitized mesoporous TiO2 films [6984-126]
F. Zheng, Shanghai Univ. (China); Y. Shen, Shanghai Univ. (China) and Shanghai Institute of Technical Physics (China); F. Gu, J. Zhang, J. Zhang, Shanghai Univ. (China)

The heterojunction structure of n-Si/p-nanocrystalline diamond film for UV detection [6984-127]
L. Wang, J. Liu, R. Xu, W. Shi, Y. Xia, Shanghai Univ. (China)

Electrical properties of radiation detector based on polycrystalline mercuric iodide (Hgl2) thick film [6984-128]
W. Shi, Y. Zheng, Y. Guo, Y. Zhang, H. Xu, L. Wang, Y. Xia, Shanghai Univ. (China)

Fabrication and characterization of 3D pn junction structure for radiation detection [6984-129]
T. Liu, T. Liu, J. Li, J. Lin, X. Chen, X. Guo, P. Xin, S. Xu, East China Normal Univ. (China); W. Xue, Shanghai Institute of Microsystem and Information Technology (China); L. Wang, East China Normal Univ. (China) and State Key Lab. of Transducer Technology (China)

A beam operated MEMS variable optical attenuator [6984-130]
S. Ding, East China Normal Univ. (China); X. Zhang, ETERN Optoelectronics Tech Co., Ltd. (China); X. Chen, L. Wang, East China Normal Univ. (China)

Surface modified polysiloxane as sensitive coating for QCM sensors [6984-131]
Z. Ying, Y. Jiang, X. Du, G. Xie, Y. Yang, H. Tai, Univ. of Electronic Science and Technology of China (China)
Comparative NH$_3$-sensing characteristic studies of PANI/TiO$_2$ nanocomposite thin films doped with different acids [6984-132]
H. Tai, Y. Jiang, G. Xie, J. Yu, Z. Ying, X. Chen, Univ. of Electronic Science and Technology of China (China)

Fabrication and NO$_2$ sensing properties of ChemFET sensors with self-assembly PAN/PSSA sensitive films based on nano-Au surface [6984-133]
Y. Jiang, H. Tai, G. Xie, J. Yu, Univ. of Electronic Science and Technology of China (China)

High performance NH$_3$ gas sensor based on ordered conducting polymer ultrathin film [6984-134]
J. Xu, Y. Jiang, J. Yu, Y. Yang, Z. Ying, Univ. of Electronic Science and Technology of China (China)

Free modulation of defect states in multilayer structures consisting of epsilon-negative material and mu-negative material [6984-135]
Q. Wang, C. Yan, L. Zhang, Y. Cui, Southeast Univ. (China)

High diffraction efficiency for multi-layer dielectric gratings with rectangular groove [6984-136]
W. Kong, M. Yun, C. Ling, X. Sun, Qingdao Univ. (China); J. Shao, Z. Fan, Shanghai Institute of Optics and Fine Mechanics (China)

Rigorous coupled-wave analysis for the optical character of multi-layer dielectric thin film [6984-137]
W. Kong, C. Ling, M. Yun, X. Sun, Qingdao Univ. (China); J. Shao, Z. Fan, Shanghai Institute of Optics and Fine Mechanics (China)

The optimization of zero-order diffractive filters for security imaging applications [6984-138]
D. Zhang, Y. Huang, Z. Ni, J. Chen, S. Zhuang, Univ. of Shanghai for Science and Technology (China); H. He, Shanghai Institute of Optics and Fine Mechanics (China)
Conference Committees

Conference Chairs

Zhang, Jie, Shanghai Jiao Tong University (China)
Chu, Junhao, Shanghai Institute of Technical Physics (China)
Zhou, Luwei, Fudan University (China)

International Advisory Committee

Buchanan, Relva C., University of Cincinnati (USA)
Cho, Alfred Y., Lucent Technologies, Bell Laboratories (USA)
Das-Gupta, Dilip K., University of Wales Bangor (United Kingdom)
De Nardo, Gallieno, International Center for Theoretical Physics (Italy)
Flory, Francois, Ecole Nationale Superieure de Physique
de Marseille (France)
Gan, Fuxi, Shanghai Institute of Optics and Fine Mechanics (China)
Gan, Zizhao, Peking University (China)
Gonzalo, Julio A., University of Puerto Rico, San Juan (Puerto Rico)
Guo, Guangcan, University of Science and Technology of China (China)
Hagenmuller, Paul, Institut de Chimie de la Matiere Condensée
de Bordeaux (France)
Kuang, Dingbo, Shanghai Institute of Technical Physics (China)
Kuwano, Yukinori, Sanyo Electric Company Ltd. (Japan)
Lei, Xiaolin, Shanghai Jiao Tong University (China)
Liang, Junwu, Tongji University (China)
Min, Naiben, Nanjing University (China)
Nishino, Taneo, Kobe University (Japan)
Östling, Mikael, KTH (Sweden)
Payne, David A., University of Illinois, Urbana-Champaign (USA)
Perinati, Agostino, Compel Electronics SpA (Italy)
Pilkuhn, Manfred H., University of Stuttgart (Germany)
Shen, Xuechu, Fudan University (China)
Shiosaki, Tadashi, Kyoto University (Japan)
Siragusa, Laura, Motorola (USA)
Sivanathan, Siva, University of Illinois at Chicago (USA)
Spencer, Michael G., Howard University (USA)
Suter, Rudolf, Satis Vacuum Industries Vertriebs AG (Switzerland)
Tang, Dingyuan, Shanghai Institute of Technical Physics (China)
Wang, Xun, Fudan University (China)
Wersing, W., Siemens AG (Germany)
Yang, Guozhen, Institute of Physics (China)
Yao, Jianquan, Tianjin University (China)
Yao, Takafumi, Tuhoku University (Japan)
Zabel, Hartmut, Ruhr-University Bochum (Germany)
Zheng, Hang, Shanghai Jiao Tong University (China)
Zheng, Youdou, Nanjing University (China)

Organization Committee

Shen, Wenzhong, Chair, Shanghai Jiao Tong University (China)
Lu, Fang, Cochair, Fudan University (China)
Ma, Hongru, Cochair, Shanghai Jiao Tong University (China)
Cao, Juncheng, Shanghai Institute of Microsystem and Information Technology (China)
Chen, Hong, Tongji University (China)
Hou, Xiaoyuan, Fudan University (China)
Kong, Xiangyang, Shanghai Jiao Tong University (China)
Li, Xiaomin, Shanghai Institute of Ceramics (China)
Liu, Pulin, Shanghai Institute of Technical Physics (China)
Song, Zhitang, Shanghai Institute of Microsystem and Information Technology (China)
Wang, Yonglin, Shanghai Institute of Ceramics (China)
Wei, Guangpu, Shanghai University (China)
Yao, Xin, Shanghai Jiao Tong University (China)
Zhang, Di, Shanghai Jiao Tong University (China)
Zheng, Maojun, Shanghai Jiao Tong University (China)
Zhu, Zhiqiang, East China Normal University (China)

Secretariat

Li, Sheng, Secretariat General, Shanghai Jiao Tong University (China)
Li, Xianfeng, Shanghai Jiao Tong University (China)
Zhang, Zhuoqun, Shanghai Jiao Tong University (China)
Lu, Jiajia, Shanghai Jiao Tong University (China)
Jiang, Zhenzong, Shanghai Jiao Tong University (China)
Zhu, Min, Shanghai Jiao Tong University (China)
Ni, Banghui, Shanghai Jiao Tong University (China)
Jiang, Lifeng, Shanghai Jiao Tong University (China)
Introduction

In recent years, thin film science has grown world-wide into a major research area. The importance of synthesizing new materials for industry has resulted in a tremendous increase of innovative thin film processing technologies. Currently, this development goes hand-in-hand with the explosion of scientific and technological breakthroughs in nanotechnology, microelectronics, and optics. The rapidly changing needs for thin film materials and devices are creating new opportunities for the development of new materials, processes, and technologies.

This conference (TFPA2007) follows the strong tradition of five previous conferences and focuses on the recent advances in the fundamental and applied aspects of thin films from the growth, characterization, and physics to the device performance and reliability. The main objective of the conference is to provide a joint forum for both the thin film physics researchers and the thin film application community to exchange their knowledge by presenting their latest results and by carrying out in-depth technical discussions. A series of thin film materials, technologies and applications, such as nanostructure films, ferroelectric and piezoelectric films, magnetic films, superconductor films, organic and polymer films, micro/nano-fabrications and characterizations, photonics and MEMS devices, solar cells, and others, are the concern of their investigations. A close combination of the experimental and theoretical investigations is a prevalent feature of these investigations.

A total of 138 papers were accepted for publication in these proceedings, which were selected from the 162 presentations on the conference. The content of the invited and contributed papers is a reflection of advanced research on thin film physics and applications. We believe that the publication of this proceedings volume will promote future research activities that will increase knowledge and understanding of thin films in various fields.

Wenzhong Shen
Junhao Chu