

**MATERIALS RESEARCH SOCIETY**  
**SYMPOSIUM PROCEEDINGS VOLUME 1014**

# **Three-Dimensional Nano- and Microphotonics**

April 9-13, 2007  
San Francisco, California, USA

**Printed from e-media with permission by:**

Curran Associates, Inc.  
57 Morehouse Lane  
Red Hook, NY 12571  
[www.proceedings.com](http://www.proceedings.com)

ISBN: 978-1-60560-419-0

Some format issues inherent in the e-media version may also appear in this print version.

ISBN: 978-1-60560-419-0

Copyright (2007) by the Materials Research Society.  
All rights reserved.

For permission requests, please contact the Materials Research Society at the address below.

Materials Research Society  
Proceedings  
506 Keystone Dr.  
Warrendale, PA 15086  
Phone: 724-779-3004 x 531  
Fax: 724-779-4396  
[eproceedings@mrs.org](mailto:eproceedings@mrs.org)

## TABLE OF CONTENTS

<b>3D Photonic Crystals as Diffractive and Energy Selective Filter for Tandem Thin Film Solar Cells</b> .....	1
<i>R. B. Wehrspohn, A. Bielawny, C. Rockstuhl, F. Lederer</i>	
<b>Bragg Reflector Waveguide and Electro-Optic Modulator Based on Barium Titanate Epitaxial Thin Films</b> .....	7
<i>Z. Liu, P. T. Lin, B. W. Wessels</i>	
<b>Angular Dispersion of Photonic Pseudogap in Opal vs Inverse Opal</b> .....	12
<i>L. K. Teh, C. C. Wong</i>	
<b>Simulation and Fabrication of Two Dimensional Nonlinear Photonic Crystals using Barium Titanite Thin Films</b> .....	17
<i>P. T. Lin, Z. Liu, B. W. Wessels</i>	
<b>Photonic Crystal Structures of Biologic Origin: Butterfly Wing Scales</b> .....	24
<i>L. P. Biro, Z. Balint, K. Kertesz, Z. Vertesy, G. I. Mark, L. Tapasztó, J. P. Vigneron, V. Lousse</i>	
<b>Novel Approach for Fabricating Highly Ordered Colloidal Crystals using Flourinated Solvent</b> .....	32
<i>S. Takeda, P. Wiltzius</i>	
<b>Selective GaAs Quantum Dot Array Growth using Dielectric and AlGaAs Masks Pattern-Transferred from Diblock Copolymer</b> .....	36
<i>J. H. Park, A. Khandekar, S. M. Park, L. Mawst, T. Kuech, P. Nealey</i>	
<b>Ion Beam Assisted Square Spiral Photonic Crystal Fabrication</b> .....	42
<i>J. Sorge, M. Summers, M. Fleischauer, K. Tabunshchik, A. Kovalenko, M. Brett</i>	
<b>Three-Dimensional Electromagnetic Metamaterials with Non-Maxwellian Effective Fields</b> .....	48
<i>J. Shin, J. T. Shen, S. Fan</i>	
<b>Theory of Thermal Emissivity and Enhanced Absorption in Sub-Wavelength Metallo-Dielectric Photonic Crystals</b> .....	54
<i>R. Biswas, I. Puscasu, M. Pralle, M. McNeal, A. Greenwald, J. Daly, E. Johnson, S. Neginhal, C. Ding</i>	
<b>Author Index</b>	