**1st International Workshop on Bismuth-Containing Semiconductors: Theory, Simulation, and Experiment**

**PROGRAM**
July 13 – 16th, 2010

**Tuesday, July 13th**

6:00-9:00pm  Welcoming Reception  
(Apanse Room, University of Michigan Museum of Art)

**Wednesday, July 14th**

8:00-8:30am  REGISTRATION AND BREAKFAST (ATRIUM 4)

8:30-8:40am  Opening Remarks  
Joanna Mullinchick and Shane Johnson (Workshop Organizers)

**I – Material Growth**

8:40-9:20am  *Molecular Beam Epitaxy Growth of GaAs<sub>1-x</sub>Bi<sub>x</sub> Alloys with High Bi Concentrations (invited)*  
Tom Tiedje (University of Victoria)

9:20-10:00am  *Present status and future prospects of Bi-containing semiconductors (invited)*  
Masahiro Yoshimoto and Kunishige Oe (Kyoto Institute of Technology)

10:00-10:20am  COFFEE BREAK (ATRIUM 4)

10:20-11:00am  *Growth, incorporation and properties of GaAsBi grown by molecular-beam epitaxy (invited)*  
Aaron Ptak (National Renewable Energy Lab)

11:00-11:20am  *Molecular Beam Epitaxy of GaNBi alloys*  
Sergey V. Novikov (University of Nottingham); C.T. Foxon, K. M. Yu, W. Walukiewicz

11:20-11:40am  *Morphological Growth Instabilities on GaAsBi/GaAs(001)*  
Faebian Bastiman (University of Sheffield)

11:40-1:00pm  LUNCH PROVIDED - Zingermann’s Deli  
(Great Lakes North, Great Lakes South and Outdoor Plaza)

**II – Surface Investigations**

1:00-1:40pm  *Unusual Bi-induced surfaces of III-V semiconductors (invited)*

1:40-2:00pm  Surface Reconstructions in GaAsBi Alloys
M. Masnadi Shirazi (University of British Columbia, Vancouver, BC); R.B. Lewis, D.A. Beaton, T. Tiedje

2:00-2:20pm  The atomic surface structure of Bi-terminated GaAs(001) grown by Molecular Beam Epitaxy
Adam Duzik and J. Mirecki Millunchick (University of Michigan)

2:20-2:40pm  Bismuth-induced structures on GaAs(100) surface in the As-rich conditions
Jouko J. K. Lang (University of Turku); P. Laukkanen, M. P. J. Punkkinen, M. Kuzmin, V. Tuominen, M. Pessa, M. Guina, I. J. Väyrynen, K. Kokko, B. Johansson, L. Vitos

2:40-3:00pm  Ab initio and scanning tunneling microscopy study of indium-terminated GaAs(100) surface: an indium-induced surface reconstruction change in the c(8×2) structure
Jouko J. K. Lang (University of Turku); M. P. J. Punkkinen, P. Laukkanen, M. Kuzmin, V. Tuominen, M. Pessa, M. Guina, I. J. Väyrynen, K. Kokko, B. Johansson, L. Vitos

3:00-3:20pm  COFFEE BREAK (ATRIUM 4)

III – Structural Properties

3:20-4:00pm  Structural analysis of Bi-containing III/V-compound semiconductors and heterostructures (invited)
Kerstin Volz (Philipps University Marburg)

4:00-4:20pm  Structural investigation of GaAsBi nanostructures by Synchrotron Radiation techniques
Gianluca Ciatto (Synchrotron SOLEIL Saint-Aubin); Xianfeng Lu, Erin Young, Frank Glas, Tom Tiedje

4:20-4:40pm  Determination of Bi positions in GaAs_{1-x}Bi_{x} heterostructures with atomic column resolution
David Sales (University of Cádiz); J. F. Rodrigo, E. Guerrero, A. Yáñez, P. L. Galindo, M. Henini, M. Shafi, S. V. Novikov, M. F. Chisholm, S. I. Molina

4:40-5:00pm  Structural and Optical Studies of GaBi_{x}As_{1-x} Grown by Molecular Beam Epitaxy on (311)B and (001) GaAs Substrates, IV – Optical Properties
Mohamed Henini (University of Nottingham)

Thursday, July 15th

8:00-8:20am  BREAKFAST (ATRIUM 4)
IV – Optical Properties

8:20-8:40am  Microscopic Modeling of Bi containing GaAs based quantum wells  
Stephan Koch (Philipps University Marburg)

8:40-9:00am  Clustering Effects in Ga(AsBi)  
Sebastian Imhof (Technische Universität Chemnitz); A. Thränhardt, A. Chernikov, N. S. Köster, K. Kolata, M. Koch, S. Chatterjee, S. W. Koch, X. Lu, S. R. Johnson, D. A. Beaton, T. Tiedje, and O. Rubel

9:00-9:20am  Photomodulated Reflectance Spectroscopy of GaAsBi/GaAs layers grown by MBE  
Zahida Batool (University of Surrey)

9:20-9:40am  Photoluminescence Study of GaAsBi Quantum Wells Grown on GaAs  
Shane Johnson (Arizona State University); C. Gogineni, N. A. Riordan, X. Lu, D. Ding, Y.-H. Zhang, T. Tiedje

9:40-10:00am  Photoluminescence Investigation of bulk GaAsBi on GaAs  
Abdul Rahman Bin Mohmad (University of Sheffield)

10:00-10:20am  COFFEE BREAK (ATRIUM 4)

V – Applications

10:20-11:00am  GaBiAs epitaxial layers for terahertz optoelectronic applications (invited)  
Arunas Krotkus (Center for Physical Sciences & Technology, Vilnius, Lithuania)

11:00-11:20am  The nature of terahertz emission from GaAsBi  
Roger Lewis (University of Wollongong)

11:20-11:40am  Auger and optical loss suppression in near- and mid-IR emitters based upon Bismide alloys  
Stephen Sweeney (University of Surrey)

11:40-12:00pm  Prospects for Dilute Bismuthides for Thermoelectric Applications  
Joshua Zide, P. B. Dongmo, J. P. Petropoulos, Y. J. Zhong (University of Delaware)

12:00-1:20pm  LUNCH PROVIDED – Glass House Catering  
(Atrium 6, Boardrooms, and Outdoor Plaza)

1:30pm  Canoe excursion and BBQ at Gallup Park  
(Buses leaves promptly at 1:45pm from Bell Tower Hotel. Buses will depart from Gallup Park at 8:30pm to return to Bell Tower Hotel for drop-off.)

Friday, July 16th

8:00-8:20am  BREAKFAST (ATRIUM 4)
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<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker and Affiliation</th>
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<tbody>
<tr>
<td>8:20-9:00am</td>
<td>Band anticrossing in III-Bi-V alloys (invited)</td>
<td>Wladek Walukiewicz (Lawrence Berkeley National Laboratory)</td>
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<td>9:00-9:40am</td>
<td>Theory of the electronic structure of dilute bismide alloys (invited)</td>
<td>Eoin O'Reilly and Andrew Lindsay (Tyndall National Institute)</td>
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<td>9:40-10:00am</td>
<td>Calculation of miniband structure in strain-balanced type-II GaAsBi/GaAsN superlattices</td>
<td>Jinyoung Hwang (University of Michigan); Jamie Phillips</td>
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<td>10:20-11:00am</td>
<td>Electronic Structure of Dilute Bismide Alloys (invited)</td>
<td>Angelo Mascarenhas (National Renewable Energy Lab)</td>
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<td>11:20-11:40am</td>
<td>Deep Level Transient Spectroscopy Measurements of GaAsBi/GaAs Heterostructures</td>
<td>Patricia Mooney (Simon Fraser University); Zenan Jiang, D. A Beaton, R. B. Lewis, I. Koslow, X. D. Chen, A. Basile, T. Tiedje</td>
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<td>11:40-12:00pm</td>
<td>Temperature Dependence of the Hole Mobility in GaAsBi</td>
<td>Daniel Beaton, R.B. Lewis, T. Tiedje (University of British Columbia)</td>
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<td><strong>12:00-1:00pm  LUNCH PROVIDED – Glass House Catering</strong></td>
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<td>(Great Lakes Central and Outdoor Plaza)</td>
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<td>1:00-1:40pm</td>
<td>Unusual compositional dependence of the exciton reduced mass in GaAsBi (invited)</td>
<td>Antonio Polimeni (Sapienza Universita' di Roma)</td>
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<td>1:40-2:00pm</td>
<td>Experimental and theoretical investigations of the electronic structure, first and second order optical susceptibilities of BiB₃O₆ single crystal</td>
<td>Ali H. Reshak (South Bohemia University, Czech Republic)</td>
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<td><strong>2:00-2:20pm  COFFEE BREAK (ATRIUM 4)</strong></td>
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<td>2:30-4:30pm</td>
<td>LAB TOURS</td>
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