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 (Apse 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$_{1-x}$Bi$_x$ 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 Kunishge 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)*

Pekka Laukkanen (University of Turku); M. P. J. Punkkinen, M. Ahola-Tuomi, M. Kuzmin, J. Lång, J. Sadowski, J. Adell, K. Schulte, R. E. Perälä, K. Kokko, L. Vitos, B. Johansson, M. Pessa, M. Guina, I. J. Väyrynen

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* $GaBi_xAs_{1-x}$ *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)**

VI – Electronic Properties

8:20-9:00am	*Band anticrossing in III-Bi-V alloys (invited)* Wladek Walukiewicz (Lawrence Berkeley National Laboratory)
9:00-9:40am	*Theory of the electronic structure of dilute bismide alloys (invited)* Eoin O'Reilly and Andrew Lindsay (Tyndall National Institute)
9:40-10:00am	*Calculation of miniband structure in strain-balanced type-II GaAsBi/GaAsN superlattices* Jinyoung Hwang (University of Michigan); Jamie Phillips
10:00-10:20am	**COFFEE BREAK (ATRIUM 4)**
10:20-11:00am	*Electronic Structure of Dilute Bismide Alloys (invited)* Angelo Mascarenhas (National Renewable Energy Lab)
11:00-11:20am	*Effective Masses in Dilute Nitride Bismide Semiconductor Alloys: Failure of the Band Anti-Crossing Model?* Rachel Goldman (University of Michigan); Tassilo Dannecker, Yu Jin, Hailing Cheng, Charlie F. Gorman, John Buckeridge, Ctirad Uher, Stephen Fahy, Cagliyan Kurdak
11:20-11:40am	*Deep Level Transient Spectroscopy Measurements of GaAsBi/GaAs Heterostructures* Patricia Mooney (Simon Fraser University); Zenan Jiang, D. A Beaton, R. B. Lewis, I. Koslow, X. D. Chen, A. Basile, T. Tiedje
11:40-12:00pm	*Temperature Dependence of the Hole Mobility in GaAsBi* Daniel Beaton, R.B. Lewis, T. Tiedje (University of British Columbia)
12:00-1:00pm	**LUNCH PROVIDED – Glass House Catering** **(Great Lakes Central and Outdoor Plaza)**
1:00-1:40pm	*Unusual compositional dependence of the exciton reduced mass in GaAsBi (invited)* Antonio Polimeni (Sapienza Universita' di Roma)
1:40-2:00pm	*Experimental and theoretical investigations of the electronic structure, first and second order optical susceptibilities of* BiB_3O_6 *single crystal* Ali H. Reshak (South Bohemia University, Czech Republic)
2:00-2:20pm	**COFFEE BREAK (ATRIUM 4)**
2:30-4:30pm	LAB TOURS