

2D Materials and Devices Beyond Graphene - NSF/AFOSR Workshop

<http://nsf2dworkshop.rice.edu/>

Wednesday, May 30, 2012	
7:15 to 8:00 am	Registration and Breakfast Buffet
8:00 to 8:20 am	Welcome and Introductions Assistant Director for Engineering: Thomas Peterson, NSF ECCS Senior Engineering Advisor: Lawrence Goldberg, NSF Division Director for DMR: Ian Robertson, NSF Chief Scientist: Thomas W. Hussey, AFOSR ECCS Program Director: Anupama Kaul, NSF
8:20 to 8:40 am	Overview Workshop Chair: Pulickel Ajayan, Rice University
8:40 to 8:50 am	Funding Agency Perspectives ENG/ECCS/NSF: Anupama Kaul, NSF MPS/DMR/NSF: Charles Ying, NSF AFOSR: James Hwang, AFOSR
8:50 to 9:30 am	Keynote Presentation - Mildred Dresselhaus --- Graphene and Beyond – A Perspective
9:30 to 9:40 am	Coffee Break
9:40 to 11:40 am	Session I: Latest in Graphene and Device Applications Chair: Anupama Kaul, NSF
9:40 to 10:00 am	Philip Kim – Columbia Graphene and Hexa Boron Nitride Heterostacks and Beyond
10:00 to 10:20 am	Walter de Heer – Georgia Tech Beyond 2D Graphene
10:20 to 10:40 am	Michael Fuhrer – University of Maryland Ultrabroadband Photodetection with Graphene Devices
10:40 to 11:00 am	Hengxing Ji – University of Texas - Austin Graphene-based and Graphene-derived Materials and their Properties
11:00 to 11:20 am	Vivek Shenoy – Brown University Influence of Grain Boundaries on the Physical Properties of Polycrystalline Graphene
11:20 to 11:40 am	Saroj Nayak – Rensselaer Polytechnic Institute Giant Band Gap Modulation in 2-Dimensional Structures through Dielectric Screening
11:40 to 12:40 pm	Working Lunch - "NSF CREATIV" Thomas Russell – NSF OD/OIA
12:40 to 2:20 pm	Session II: Synthesis, Chemistry, Characterization and Modeling of 2D Atomic Layers Chair: Pani (Chakrapani) Varanasi, ARO
12:40 to 1:00 pm	Yury Gogotsi – Drexel University Two-Dimensional Carbides and Related Compounds
1:00 to 1:20 pm	Mauricio Terrones – Penn State and Shinshu University Single Layer Dichalcogenides: Theory, Preparation and Characterization
1:20 to 1:40 pm	Thomas Mallouk – Penn State Synthesis of Functional Nanostructures through Topochemical Reactions of Layered Solids
1:40 to 2:00 pm	Manish Chhowalla – Rutgers University Chemically Exfoliated Layered Transition Metal Chalcogenide Nanosheets for Energy Applications
2:00 to 2:20 pm	Jun Lou – Rice University Large Area Vapor Phase Growth and 2D Engineering of Atomic Layers
2:20 to 2:35 pm	Coffee Break
2:35 to 4:35 pm	Session III: Devices and Applications of 2D Layered Materials Chair: James Hwang, AFOSR
2:35 to 2:55 pm	Andras Kis - Lausanne Single Layer MoS ₂ : Devices, Electronics and Mechanics
2:55 to 3:15 pm	Gotthard Seifert - Dresden Perspectives and Limits of Transition Metal Chalcogenide Nanostructure (TMCN) Based Electronic Devices
3:15 to 3:35 pm	Boris Yakobson – Rice University Probing the BCN-triangle by Computations—Outside the Carbon Corner

3:35 to 3:55 pm	Mustafa Lotya – Trinity College Dublin Liquid Phase Exfoliation of Graphene and Inorganic Layered Compounds – a Route to Diverse Application
3:55 to 4:15 pm	Jeanie Lau – UC Riverside 1, 2, 3: Strains, Band Gap and Many-body Physics in Graphene
4:15 to 4:35 pm	Debdeep Jena, University of Notre Dame 2D Crystals: Solutions for Next Generation Electronic
4:35 to 4:45 pm	Coffee Break
4:45 to 6:00 pm	Breakout Sessions I
	2D Layered Materials (beyond grapheme) for Electronic Applications Chairs: Kaustav Banerjee, UCSB; Michael Fuhrer, UMD; Ivan Oleynik, USF
	2D Layered Materials (beyond graphene) for Structural and Energy Applications Chairs: David Geohegan, ORNL; Thomas Mallouk, PSU; Mauricio Terrones, PSU and Shinshu University
	2D Layered Materials (beyond graphene) for Photonic and Sensing Applications Chairs: Manish Chhowalla, Rutgers; Keith Perkins, NRL
Thursday, May 31, 2012	
7:15 to 8:00 am	Registration and Breakfast Buffet
8:00 to 10:20 am	Session IV: Synthesis, Chemistry, Characterization and Modeling of 2D Atomic Layers Chair: Charles Ying, NSF
8:00 to 8:20 am	Alex Zettl – UC Berkeley Synthesis, Characterization, and Opportunities for 2D Materials Based on BN and MX ₂
8:20 to 8:40 am	Yoichi Ando – Osaka University Progress in Topological Insulator Materials for 2D Devices
8:40 to 9:00 am	Xiao-Liang Qi – Stanford University Topological Insulator Surface States Coupled with Magnetic Materials
9:00 to 9:20 am	Sanjay Banerjee – UT Austin Novel Transistor Concepts Based on 2D systems- Graphene and Topological Insulators
9:20 to 9:40 am	Ali Javey – UC Berkeley 2D III-V XOI: Materials and Devices
9:40 to 10:00 am	Peide Ye - Purdue Device Aspects of 2D Crystals: High-k Integration, Contacts, and Scaling
10:00 to 10:20 am	Joshua Goldberger - Ohio State Germananes and Silicenes: Ge and Si Graphene Analogues
10:20 to 10:35 am	Coffee Break
10:35 to 12:30 pm	Breakout Sessions II
	2D Layered Materials (beyond grapheme) for Electronic Applications Chairs: Kaustav Banerjee, UCSB; Michael Fuhrer, UMD; Ivan Oleynik, USF
	2D Layered Materials (beyond graphene) for Structural and Energy Applications Chairs: David Geohegan, ORNL; Thomas Mallouk, PSU; Mauricio Terrones, PSU and Shinshu University
	2D Layered Materials (beyond graphene) for Photonic and Sensing Applications Chairs: Manish Chhowalla, Rutgers; Keith Perkins, NRL
12:30 to 1:30 pm	Working Lunch - "NSF SAVI" Keith Marzullo, Division Director of Computer and Network Systems
1:30 to 2:30 pm	Brief 20 minute Presentations from Breakout Sessions
2:30 to 3:15 pm	General Concluding Discussions (Panel Session)
3:15 to 3:45 pm	Closing Remarks
	Director of the Physics and Electronics Directorate – Patrick Carrick, AFOSR
	Deputy Assistant Director for Engineering – Kesh Narayanan, NSF
3:45 pm	Adjournment Anupama Kaul and Pulickel Ajayan
3:45 pm – Onward	
Mixer with Program Managers	