

Mina Yoon
R&D staff
Nanomaterials Theory Institute
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Education:

Michigan State University, East Lansing	Ph.D.	2004	Physics
Seoul National University, Seoul, South Korea	M.S.	1999	Physics
Ewha Womans University, Seoul, South Korea	B.S.	1996	Physics

Professional Experience:

2011–p	R&D Staff, Center for Nanophase Materials Sciences (CNMS), Oak Ridge National Laboratory (ORNL)		
2009–p	R&D Staff, Materials Science and Technology Division (MSTD), ORNL		
2008–2011	Max Planck Fellowship, Fritz Haber Institute of the Max Planck Society, Berlin, Germany		
2005–2009	Research Assistant Professor, Department of Physics and Astronomy, University of Tennessee-Knoxville		
2004–2005	Postdoctoral Research Associate, Condensed Matter Sciences Division, ORNL		

Research Interests:

I am doing research in the field of theoretical and computational condensed matter physics. The primary focus of my research lies in the fundamental understanding of growth mechanisms, novel properties, electronic ground and excited state properties, functionalization of low-dimensional materials, such as surface-based materials, metal/oxide films, and organic/inorganic/hybrid, oxide, and carbon-based nanostructures. Especially, I am interested in utilizing these materials for energy applications. My theoretical approach ranges from atomistic modeling by first-principles quantum mechanical approaches and many-body potential approaches, to continuum elasticity theory and microscopic and phenomenological modeling.

Professional Activities, Honors, and Awards:

Max Planck Fellowship, Fritz Haber Institute of the Max Planck Society, Germany, 2008-1011
Organization Committee, Conference on Computational Physics 2011, Gatlinburg, Tennessee, 2011
Organizer, First Principles Theory and Modeling in Organic Electronics Workshop, Centre European de Calcul Atomique et Moléculaire (CECAM), Lausanne, Switzerland, 2011
Organizer, CECAM Symposium at Psi-k 2010 on Organic Electronics for Energy Research, Berlin, Germany, 2010
Session Chair: American Physical Society March Meetings, 2006–2008
Referee, Peer-Reviewed Journals: *Physical Review Letters*; *Journal of the American Chemical Society*; *Physical Review B*; *Nano Letters*; *Journal of Chemical Physics*; *Nanotechnology*; *ACS Nano*; *Applied Physics Letters*; *Physics Letters A*

Selected Peer-Reviewed Publications: (total > 23 refereed journal papers, > 550 citations)

M. Yoon, Y. Miyamoto, and M. Scheffler, Enhanced dipole moments in photo-excited TTF-TCNQ dimers, *New J. Phys.* **13**, 073039 (2011).

M. Yoon, H.H. Weitering, and Z. Zhang, First-principles theoretical studies of hydrogen interaction with ultrathin Mg and Mg-based alloy films, *Phys. Rev. B* **83**, 045413 (2011).

M. Yoon and D. Tománek, Equilibrium structure of ferrofluid aggregates, *J. Phys.: Condens. Matter* **22**, 455105 (2010).

M. Yoon, S.Y. Yang, C. Hicke, D. Geohegan, E. Wang, and Z.Y. Zhang, Calcium as a superior coating metal in functionalization of carbon fullerenes for high-capacity hydrogen storage, *Phys. Rev. Lett.* **100**, 206806 (2008).

M. Yoon, S.Y. Yang, Enge Wang, and Z.Y. Zhang, Charged fullerenes as high capacity hydrogen storage media, *Nano Lett.* **7**, 2578 (2007).

M. Yoon, H.N. Lee, W. Hong, H.M. Christen, Z.Y. Zhang, and Z. Suo, Dynamics of step-bunching in heteroepitaxial growth on vicinal substrates, *Phys. Rev. Lett.* **99**, 055503 (2007).

M. Yoon, P. Borrmann, and D. Tománek, Targeted medication delivery using magnetic nanostructures, *J. of Phys: Cond. Mat.* **19**, 086210 (2007).

W. Hong, H.N. Lee, M. Yoon, H.M. Christen, D.H. Lowndes, Z. Suo, and Z.Y. Zhang, Persistent step-flow growth of strained films on vicinal substrates, *Phys. Rev. Lett.* **95**, 095501 (2005).

M. Yoon *et al.*, The zipper mechanism of nanotube fusion: Theory and Experiment, *Phys. Rev. Lett.* **92**, 075504 (2004).

N. Park, M. Yoon, S. Berber, J. Ihm, E. Osawa, and D. Tománek Magnetism in all-carbon structures with negative Gaussian curvature, *Phys. Rev. Lett.* **91**, 237204 (2003).

Graduate and Postdoctoral Advisors:

Ph.D Advisor: D. Tománek, Michigan State University

Postdoctoral Advisor: Z.Y. Zhang, University of Science and Technology of China, Hefei, China

Thesis Advisor and Postgraduate-Scholar Sponsor:

Total Graduate Students Advised: 2

Total Postdoctoral Scholars Advised: 0