

# Yuranan Hanlummyuang

Department of Materials Engineering  
Faculty of Engineering  
Kasetsart University  
50 Ngamwongwan Rd.  
Ladyao, Chatuchak  
Bangkok, Thailand 10900  
phone: (02) 797-0999 ext 2119  
email: yuranan.h@ku.th

Materials Innovation Center  
Faculty of Engineering  
Kasetsart University  
50 Ngamwongwan Rd.  
Ladyao, Chatuchak  
Bangkok, Thailand 10900

## RESEARCH AREAS OF INTEREST

---

Computational materials engineering, Kinetics of electrochemical reactions, Alternative energy

## PROFESSIONAL PREPARATION

---

### **B.S. Materials Science and Engineering with an additional major in Physics.**

Carnegie Mellon University, Pittsburgh, 2006

Graduated with both CIT (Engineering) and Mellon College of Science Research Honor

### **M.S. Materials Science and Engineering.** University of California, Berkeley, Berkeley, 2008

### **Ph.D. Materials Science and Engineering.** University of California, Berkeley, Berkeley, 2011

Thesis: Mechanical Properties of Alloys from First Principles

Advisor: Daryl C. Chrzan

### **Post Doctoral Fellow.** University of Houston, 2012-2013

Mentor: Pradeep Sharma

## PUBLICATIONS

---

- Y. Hanlummyuang, P.A. Gordon, T. Neeraj, and D.C. Chrzan. "Interactions between carbon solutes and dislocations in bcc iron." *Acta Materialia* **58**, 5481 (2010).
- Y. Hanlummyuang, X. Li, and P. Sharma. "Mechanical strain can switch the sign of quantum capacitance from positive to negative." *Physical Chemistry Chemical Physics* **16**, 22962 (2014).
- Y. Hanlummyuang, L. P. Liu, and P. Sharma. "Revisiting the entropic force between fluctuating biological membranes." *Journal of the Mechanics and Physics of Solids* **63**, 179 (2014).
- Y. Hanlummyuang, P. R. Ohodnicki, D. E. Laughlin, and M. E. McHenry. "Bragg-Williams model of Fe-Co order-disorder phase transformations in a strong magnetic field." *Journal of Applied Physics* **99**, 08F101 (2006).
- Y. Hanlummyuang, R. P. Sankaran, M. P. Sherburne, J.W. Morris Jr., and D. C. Chrzan. "Phonons and phase stability in TiV approximants to Gum Metal." *Phys. Rev. B* **85**, 144108 (2012).
- Y. Hanlummyuang and P. Sharma. "Quantum capacitance: A perspective from physics to nanoelectronics." *Journal of Metals* **66**, 660 (2014).
- D. C. Chrzan, M. P. Sherburne, Y. Hanlummyuang, T. Li, and J. W. Morris. "Spreading of dislocation cores in elastically anisotropic body-centered-cubic materials: The case of gum metal." *Phys. Rev. B* **82**, 184202 (2010).
- J.W. Morris Jr., Y. Hanlummyuang, M. Sherburne, E. Withey, D.C. Chrzan, S. Kuramoto, Y. Hayashi, and M. Hara. "Anomalous transformation-induced deformation in  $\langle 1\bar{1}0 \rangle$  textured Gum Metal." *Acta Materialia* **58**, 3271 (2010).
- P. R. Ohodnicki, Y. Hanlummyuang, D. E. Laughlin, and M. E. McHenry. "Bragg-Williams model of CsCl-type ordering of the FeCo system in strong magnetic fields." *Metallurgical and Materials Transactions A: Physical Metallurgy and Materials Science* **38**, 738 (2007).

- P. R. Ohodnicki, K. Y. Goh, Y. Hanlumuayang, K. Ramos, M. E. McHenry, Z. Cai, K. Ziemer, H. Morkoc, N. Biyikli, Z. Chen, C. Vittoria, and V. G. Harris. "Magnetic anisotropy and crystalline texture in  $\text{BaO}(\text{Fe}_2\text{O}_3)_6$  thin films deposited on GaN/ $\text{Al}_2\text{O}_3$ ." *Journal of Applied Physics* **101**, 095M521 (2007).
- G. Shi, Y. Hanlumuayang, Z. Liu, Y. Gong, L. Ma, J. Lou, P. Sharma, and P. M. Ajayan. "Boron nitride-graphene nanocapacitor and the origins of anomalous size-dependent increase of capacitance." *Nano Lett.* **14**, 1739 (2014).
- M. Zelisko, Y. Hanlumuayang, S. Yang, Y. Liu, P. M. Ajayan, J. Li, and P. Sharma. "Anomalous piezoelectricity in two-dimensional graphene nitride nanosheets." *Nature Communications* **5**, 4284 (2014).
- X. Zhang, S. Ha, Y. Hanlumuayang, C. H. Chou, V. Rodriguez, M. Skowronski, J. J. Sumakeris, M. J. Paisley, and M. J. O'Loughlin. "Morphology of basal plane dislocations in 4H-SiC homoepitaxial layers grown by chemical vapor deposition." *Journal of Applied Physics* **101**, 053517 (2007).

## COMPUTER/LABORATORY SKILLS

- ◇ **Programming/Parallel Programming/Scripting.** C/C++, FORTRAN, Java, Perl, MPI, OpenMP, UNIX shell, sed, awk, TORQUE
- ◇ **Data Analysis.** Mathematica, Matlab, Python
- ◇ **Quantum/Molecular Simulations Code.** Quantum Espresso, SIESTA, ABINIT, VASP, BigDFT, Wannier90, DFTB+, DFTB+NEGF, LAMMPS, GULP, MOLLY, GROMACS, PLUMED
- ◇ **Productivity Software.** L<sup>A</sup>T<sub>E</sub>X, Word, Excel, Powerpoint, Inkscape
- ◇ **X-ray Diffraction.** Extensive experience with X-ray tomography. Powder, single crystal, Laue diffraction
- ◇ **Sample Analysis/Preparation.** X-ray diffraction, furnace operation, mechanical testing

## HONORS AND AWARDS

- |           |  |
|-----------|--|
| 2010      | Outstanding Graduate Student Instructor, University of California, Berkeley              |
| 2006-2008 | Jane Lewis Fellowship, University of California, Berkeley                                |
| 2006      | ASM Outstanding College Senior, ASM Golden Triangle Chapter, Pittsburgh                  |
| 2006      | Phi Kappa Phi Senior Honor, Carnegie Mellon University, Pittsburgh                       |
| 2006      | Carnegie Institute of Technology Research Honor, Carnegie Mellon University, Pittsburgh  |
| 2006      | Mellon College of Science Research Honor, Carnegie Mellon University, Pittsburgh         |
| 2002-2006 | Dean's list (top 10 % of class in all semesters), Carnegie Mellon University, Pittsburgh |

## PRESENTATIONS

**Materials Research Society.** Boston, MA, 2013

Contributed talk, "Revisiting The Entropic Force Between Fluctuating Lipid Bilayer Membranes."

**American Society of Mechanical Engineers.** San Diego, CA, 2013

Contributed talk, "Anisotropic Elastic Underpinnings for Atomistic Study of Periodic Dislocations."

**Pan-American Congress of Applied Mechanics.** , Houston, TX, 2013

Contributed talk, "Accessing Quantum Capacitance in Nanomaterials."

**Pan-American Congress of Applied Mechanics.** , Houston, TX, 2013

Contributed talk, "A Method to Study Total and Interaction Energy of Dislocations in Anisotropic Crystals."

**Materials Research Society.** San Francisco, CA, 2013

Contributed talk, "Accessing Quantum Capacitance in Nanomaterials."

**American Society of Mechanical Engineers.** Houston, TX, 2012

Contributed talk, "Mechanics of Quantum Capacitance."

**Society of Engineering Science.** Atlanta, GA, 2012

Contributed talk, "Mechanics of Quantum Capacitance."

**Materials Research Society.** Boston, MA, 2008.

Contributed talk, "Elastic Interactions between Solutes and Dislocations in Structural Materials."

**TMS 136th Annual Meeting and Exhibition.** New Orleans, LA, 2008.

Contributed talk, "Interaction Between Carbon Solutes and Dislocations in BCC Iron."

## REFERENCES

---

Assistant Professor Yuttanant Boonyongmaneerat

Chulalongkorn University, Soi Chula 12, Phayathai Rd., Pathumwan, Bangkok, Thailand 10330

phone: (662) 218-4243, email: [yuttanant.b@chula.ac.th](mailto:yuttanant.b@chula.ac.th)

Professor Pradeep Sharma

University of Houston, N207 Engineering Building 1, Houston, TX 77204

phone: (713) 743-4256, email: [psharma@central.uh.edu](mailto:psharma@central.uh.edu)

Professor Daryl C. Chrzan

University of California, Berkeley, 210 HMMB, Room 318, Berkeley, CA 94720

phone: (510) 643-1624, email: [dcchrzan@berkeley.edu](mailto:dcchrzan@berkeley.edu)