Nirand Pisutha-Arnond, Ph.D.

(อาจารย์ ดร.นิรันดร์ พิสุทธอานนท์)

Department of Industrial Engineering, Faculty of Engineering,
Chiang Mai University,
239 Huay Kaew Road, Muang District, Chiang Mai, Thailand 50200
Mobile: 6691-062-4409, Email: panirand@gmail.com

Work Experiences

- 2020-Present: Faculty Position at Department of Industrial Engineering, Faculty of Engineering, Chiang Mai University,
- 2018-2019: Vice Director of Office of General Education, King Mongkut's Institute of Technology Ladkrabang
- 2013-2020: Faculty Position at Department of Industrial Engineering, King Mongkut's Institute of Technology Ladkrabang
- 2011 : Graduate Teaching Assistant at Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, USA (Course: Introduction to Materials Science)
- 2005-2013: Graduate Research Assistant at Department of Materials Science and Engineering, University of Michigan, Ann Arbor, MI, USA
- 2001-2005: Undergraduate Research Assistant at Department of Materials Science and Engineering, Northwestern University, Evanston, IL, USA

Education

- Ph.D. Materials Science and Engineering (2013), University of Michigan, Ann Arbor, MI, USA (Advisor: Prof. Dr. Katsuyo Thornton) (Thesis Title: Computational Study of and Model Development for Morphological Evolution in Metallic-Nanostructure Heteroepitaxy)
- B.S. Materials Science and Engineering (2005), Northwestern University, Evanston, IL, USA (GPA 3.765, Cum Laude)

Research Expertise

- **Computational Materials Science:** Continuum Theory Development, Microstructural Simulations, Deformation Phenomena, Numerical Methods in Computer Simulations

- **Metallurgy**: High Temperature Metals, Metal Failure, Materials Selection

Projects

- 2018-2019, "**Investigation on Magnetic Materials Using the Phase-Field Crystal Method**"
  Role: Project Leader, Sponsor: Ministry of Science and Technology
- 2018-2020, "**Investigation of Effect of Stress on Magnetic Materials Using Phase-Field Crystal Method**"
  Role: Project Leader, Sponsor: King Mongkut's Institute of Technology Ladkrabang (Researcher Grant)
- 2018, "**Startup Thailand 24 Hours Innovation - Regional League**"
  Role: Project Coordinator, Sponsor: National Science Technology and Innovation Policy
- 2017, "**Investigation and Optimization of Vehicle-Door Attributes: A Case Study at the Ford Manufacturing Plant in Thailand**"
  Role: Student Advisor, Sponsor: Ford Thailand Manufacturing
- 2016-2017, "**Geothermal Energy Assessment in Northern Thailand**"
  Role: team member, Sponsor: PTT Exploration and Production Public Co., LTD.
- 2015-2017, "**Simulation of Diamond Cubic Structure Using the Phase Field Crystal Method and Development of Numerical Technique to Simulate Deformation of Materials Using the Phase Field Crystal Method**"
  Role: Project Leader, Sponsor: King Mongkut's Institute of Technology Ladkrabang (New Researcher Grant)
- 2015-2017, "**Parameterization of the Phase-Field Crystal Method using Elastic Constants**"
  Role: Project Leader, Sponsor: Thailand Research Fund (New Researcher Grant)
- 2015-2016, "**Investigation of Thermode Failure in Anisotropic Conductive Film Bonding**"
  Role: Project Leader, Sponsor: Western Digital (Thailand) Co., LTD.

Publications

- J. Em-Udom, **N. Pisutha-Arnond**, "Prediction of Mechanical-Hysteresis Behavior and Complex Moduli Using the Phase Field Crystal Method with Modified Pressure Controlled Dynamic Equation" Materials Research Express, 7, 015326, p.1-13, 2020. (https://doi.org/10.1088/2053-1591/ab611f)

- J. Em-Udom, **N. Pisutha-Arnond**, "Investigation of Viscoelastic-Creep and Mechanical-Hysteresis Behaviors of Hydrostatically-Stressed Crystal using the Phase Field Crystal Method" Advances in Mathematical Physics, 2020, 2821402, p.1-20, 2020. (https://doi.org/10.1155/2020/2821402)
- **N. Pisutha-Arnond**, "Fourier-Spectral-Method Implementation of Deformation in the Phase-Field Crystal Model", MATEC Web of Conferences, 192, 01028, p.1-4, 2018. (https://doi.org/10.1051/matecconf/201819201028)
- J. Em-Udom, **N. Pisutha-Arnond**, "Pressure-Controlled Dynamic Equation for the Phase-Field Crystal Method," IOP Conference Series: Materials Science and Engineering, 361, 012006, p.1-6, 2018. (https://doi.org/10.1088/1757-899X/361/1/012006)
- J. Em-Udom and **N. Pisutha-Arnond**, "Investigation on Viscoelastic-Creep Behavior of the Phase-Field Crystal Method," IOP Conference Series: Materials Science and Engineering, 361, 012009, p.1-5, 2018. (https://doi.org/10.1088/1757-899X/361/1/012009)
- V. W. L. Chan, **N. Pisutha-Arnond**, and K. Thornton, "Thermodynamic Relationships for Homogeneous Crystalline and Liquid Phases in the Phase-Field Crystal Model", Computational Materials Science, 135, p.205-213, 2017. (https://dx.doi.org/10.1016/j.commatsci.2017.04.017)
- V. W. L. Chan, **N. Pisutha-Arnond**, and K. Thornton, "Phase-Field Crystal Model for Diamond-Cubic Structure", Physical Review E 91, 053305, p.1-9, 2015. (https://dx.doi.org/10.1103/PhysRevE.91.053305)
- **N. Pisutha-Arnond**, V. W. L. Chan, M. Iyer, V. Gavini, and K. Thornton, "Classical Density Functional Theory and the Phase-Field Crystal Method using a Rational Function to Describe the Two-Body Direct Correlation Function", Physical Review E 87, 013313, p.1-14 2013. (https://doi.org/10.1103/PhysRevE.87.013313)
- **N. Pisutha-Arnond**, V. W. L. Chan, K. R. Elder, and K. Thornton, "Calculations of Isothermal Elastic Constants in the Phase-Field Crystal Model", Physical Review B 87, 014103, p.1-12, 2013. (https://doi.org/10.1103/PhysRevB.87.014103)
- **N. Pisutha-Arnond**, B. Yang, D. H. Lim, M. Asta, and K. Thornton, "Stability of Strained Thin Films with Interface Misfit Dislocations: A Multiscale Computational Study" Thin Solid Films, 519, p.809-817, 2010. (https://doi.org/10.1016/j.tsf.2010.08.100)

Teaching Classes

- Fun with Artificial Intelligence (Undergraduate Level)
- Thermodynamics of Materials (Undergraduate and Doctoral Levels)
- Engineering Materials (Undergraduate and Master Levels)
- Engineering Metallurgy (Undergraduate Level)
- Materials Selection and Engineering Design (Undergraduate Level)
- Acoustic Materials (Undergraduate Level)
- Engineering Workshop - Foundry (Undergraduate Level)
- Senior Projects (Undergraduate Level)

Conference Oral Presentations

- **N. Pisutha-Arnond**, " Implementation of Shear-Type Deformation in the Phase-Field Crystal Method" The 2nd Materials Research Society of Thailand International Conference (MRS-Thailand 2019), Pattaya, Thailand, July 10-12, 2019.
- **N. Pisutha-Arnond**, " The Phase-Field Crystal Method: An Overview, Development, and Applications" The 23rd International Annual Symposium on Computational Science and Engineering (ANSCSE23), Chiang Mai, Thailand, June 27-29, 2019.
- **N. Pisutha-Arnond**, V.W.L. Chan, K. Elder, K. Thornton, "Calculations of Isothermal Elastic Constants Using the Phase-Field Crystal Method" American Physical Society (APS) March Meeting 2013, Baltimore, MD, March 18-22, 2013
- **N. Pisutha-Arnond**, V.W.L. Chan, K. Elder, K. Thornton, "Calculations of Isothermal Elastic Constants Using the Phase-Field Crystal Method" 49th Annual Technical Meeting of Society of Engineering Science (SES), Atlanta, GA, October 10-12, 2012
- **N. Pisutha-Arnond**, V. Chan, M. Iyer, V. Gavini, and K. Thornton, "A Phase-field-crystal and Classical Density Functional Theory Models Using an Accurate Fitting of Two-point Correlation Function" Materials Research Society (MRS) Spring Meeting 2011, San Francisco, CA, April 25-29, 2011.
- **N. Pisutha-Arnond**, V. Chan, M. Iyer, V. Gavini, and K. Thornton, "Phase Field Crystal Modeling with an Improve Correlation Function" Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 23-26 2010.

- **N. Pisutha-Arnond**, B. Yang, D.-H Lim, M. Asta, and K. Thornton, "Modeling of Magnetic Thin Film with Misfit Dislocations," The Minerals, Metals & Materials Society (TMS) 2010 Annual Meeting & Exhibition, Seattle, WA, February 14-18, 2010.
- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Modeling of Magnetic Thin Film with Misfit Dislocations," Materials Research Society (MRS) Fall Meeting 2009, Boston, MA, November 30-December 4, 2009.
- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Modeling of Epitaxial Growth of Magnetic Thin Films," The Minerals, Metals & Materials Society (TMS) 2018 Annual Meeting & Exhibition, New Orleans, LA, March 9-13, 2008.
- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Heteroepitaxy of Magnetic Thin Films: Connecting Ab Initio Calculations to Continuum Modeling" Society for Industrial and Applied Mathematics (SIAM) Conference on Mathematical Aspects of Materials Science, Philadelphia, PA, May 11-14 2008.
- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Multiscale Modeling of Magnetic Thin Film with Misfit Dislocations" Magdot 2nd Workshop, Napa, CA, August 18-20, 2008.
- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Investigation of Misfit Dislocation at Fe/Mo Interface" Magdot 1st Workshop, Dresden, Germany, July 23-25, 2007.
- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Investigation of Misfit Dislocation at Fe/Mo Interface" Engineering Graduate Symposium, Ann Arbor, MI, November 2, 2007.
- **N. Pisutha-Arnond**, S. Wise, J. Lowengrub, P. Voorhes, and K. Thornton, "Examination of Self-Assembly of Quantum Dots and Quantum Dots Superlattices Using the Phase Field Model of a Heteroepitaxial Thin Film", Materials Research Society (MRS) Fall Meeting 2006, Boston, MA, November 27-December 1, 2006

Conference Poster Presentations

- **Nirand Pisutha-Arnond**, "Fourier-Spectral-Method Implementation of Deformation in the Phase-Field Crystal Model" The 4th International Conference on Engineering, Applied Sciences and Technology, Phuket, Thailand, January 4-7, 2018
- **Nirand Pisutha-Arnond**, Victor Chan, and Katsuyo Thornton, "Phase Field Crystal Method: Thermodynamically Consistent Calculations of Elastic Constants" TRF-OHEC Annual Congress 2017, Phetchaburi, Thailand, January 11-13, 2017

- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Stability of Epitaxial Thin Film, Gordon Research Conference on Physical Metallurgy, Andover, NH August 2-7, 2009
- **N. Pisutha-Arnond**, B. Yang, M. Asta, and K. Thornton, "Stability of Epitaxial Thin Film, Engineering Graduate Symposium, Ann Arbor, MI November 13, 2009

Awards

- Graduate Fellowship from Royal Thai Government (Ministry of Science and Technology) (2005 to 2011)
- Undergraduate Fellowship from Royal Thai Government (Ministry of Science and Technology) (2001 to 2005)

Skills

- Programming Languages: Fortran 90/95, C++, IDL (Interactive Data Language), Matlab, Mathematica, Maple, Javascript
- Document Creation: Microsoft Office, Latex (Document Markup Language)
- Multimedia Programs: Adobe Illustrator, Adobe Photoshop, Adobe Premiere Pro, Adobe After Effects, Adobe InDesign, Cakewalk Sonar (Music Creation)
- Website Creation and Administration
- Music Performance (Piano & Guitar)

Overseas Links

- **Prof. Dr. Katsuyo Thornton** (Department of Materials Science, University of Michigan, Ann Arbor, MI, USA)
- **Dr. Victor Chan** (Brookhaven National Laboratory, Upton, NY, USA)
- **Asst. Prof. Dr. Hui-Chia Yu** (Department of Computational Mathematics, Science and Engineering, Michigan State University, East Lansing, MI, USA)
- **Asst. Prof. Dr. Hsun-Yi Chen** (Department of Bio-Industrial Mechatronics Engineering, National Taiwan University, Taipei, Taiwan)