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Nopporn Rujisamphan (Ph.D.) | Curriculum Vitae

Principal Investigator of Laboratory for Interface and Surface Characterization
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About Research

"Energy" is one of the key building blocks of life, and for use in running a whole country of Thailand. The central theme of Dr. Rujisamphan research is the fabrication and characterization of semiconductor materials for solar cell applications. A novel synthetic protocol as combined all solution-based approaches, is one of the primary focuses of Dr. Rujisamphan's research. Also, surface photovoltage spectroscopy (SPV) measurements in a capacitive arrangement is a characterization tool utilized for a better understanding of photoinduced charge separation and charge transport as well as defect states in fabricated semiconducting materials. Applications of Dr. Rujisamphan's work include the design and fabricate the light-absorbing layers of methylammonium (MA) and Formamidinium (FA) based organometallic halide perovskites for next generation of solar cells.

Education

- Doctorate of Philosophy [University of Delaware, USA] Materials Sci & Engineering
  Dissertation Committee:
  Professor Dr. S. Ismat Shah (Director Energy and Environmental Policy Program)
  Professor Dr. Chaoying Ni (Director of Keck Center for Advanced Microscopy and Microanalysis)
- Master's degree [Chulalongkorn University, Thailand] Physics
  Thesis Committee:
  Associate Prof. Dr. Boonchoat paosawatyanyong
  Associate Prof. Dr. Vittaya amornkitbamrung
- Bachelor's degree [Khon Kaen University, Thailand] Physics
  Project Committee:
  Associate Prof. Dr. Ekaphan Swatsitang
  Associate Prof. Dr. Vittaya amornkitbamrung

Academic positions

- Lecturer/Researcher at Nanoscience and Nanotechnology Graduate Program @ KMUTT

Visiting positions

- Germany, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Institute of Heterogeneous Materials, visiting scholars in 2013
- Germany, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Institute of Heterogeneous Materials, visiting scientist in 2014

- Germany, Helmholtz-Zentrum Berlin für Materialien und Energie GmbH, Institut für Silizium-Photovoltaik visiting scientist in 2016

Teaching Experience
PHY324 Thin Films Technology, from 2015 — current
PHY602 Advance Nanomaterials Processing, from 2016 — current
NST601 Introduction to Nanomaterials Technology, from 2016 — current
NST602 Fabrication and Characterization of Nanomaterials, from 2016 — current
NST690/691/692 Seminar, from 2016 — current

Referee/Reviewer:
- Electrochimica Acta,
- Applied Surface Science

Fellowships, Grants, and Awards
1. National Research University (NRU), 2014-2015
2. Faculty of Science, King Mongkut's University of Technology Thonburi, 2014-2015
3. National Science and Technology Development Agency and Electricity Generating Authority of Thailand co-funding, 2014-2015
4. Thailand Research Fund (TRF), 2016-2017
5. Cluster of Theoretical and Computational Science Center (TaCS), 2015-2016
6. Research University Network, Thailand (RUN), 2017-2020

Published Papers
1. Th. Dittrich, L. E. Valle Rios, S. Kapil, G. Gurieva, N. Rujisamphan, S. Schorr "Temperature dependent transient surface photovoltage spectroscopy of a Cu1.95Zn1.1Sn0.96Se4 kesterite single phase powder", Applied Physics Letters, 110, 2017, 023901.
2. Zuhal Onuk, Nopporn Rujisamphan, Roy Murray, Mohamed Bah, Murat Tomakin, S.Ismat Shah "Controllable Growth and Characterization of Highly Aligned ZnO Nanocolumnar Thin Films", Applied Surface Science, 396, 2017, 1458-1465.
3. T. Supasai, N. Henjongchom, I-M. Tang, F. Deng, N. Rujisamphan "Compact nanostructured TiO_2 deposited by aerosol spray pyrolysis for the hole-blocking layer in a $CH_3NH_3PbI_3$ perovskite solar cell", Solar Energy, 136, 2016, 515-524.
4. Nopporn Rujisamphan, Roy E. Murray, Fei Deng, Thidarat Supasai "Co-sputtered metal and polymer nanocomposite films and their electrical responses for gas sensing application", Applied Surface Science, 368, 2016, 114-121.
5. Nopporn Rujisamphan, Thidarat Supasai, Thomas Dittrich "Photoinduced charge dissociation and transport at P3HT/ITO interfaces: studied by modulated surface spectroscopy", Applied Physics A, 122(2), 2016, 1-6.
6. Th. Dittrich, L. E. Valle Rios, G. Gurieva, S. Kapil, N. Rujisamphan, S. Schorr, "Surface photovoltage study of Cu1.95Zn1.1Sn0.96Se4 single phase powder", EUPVSEC-32, 20-24 June 2016, München, Germany
7. Roy Murray, Nopporn Rujisamphan, S. Ismat Shah "Predicting current from cross section images of organic photovoltaic devices", Solar Energy Materials and Solar Cells, 134, 2015, 231-235.

8. A.H. Amrahova, G.M. Eyvazova, M.B. Muradov, E. Yassitepe, N. Rujisamphan, S. Ismat Shah "Synthesis of copper sulfide nanoparticles by combined successive ionic layer adsorption and reaction (silar) and ion exchange methods", Journal of Nanostructured Polymers and Nanocomposites, 10(1), 2014, 29-33.
9. Nopporn Rujisamphan, Roy E Murray, Fei Deng, Chaoying Ni, S Ismat Shah "Study of Nanoscale Morphology of Polythiophene Fibrils and Fullerene Derivative", ACS Applied Materials & Interfaces, 6 (15), 2014, 11965-11972.
10. Roy Murray, Nopporn Rujisamphan, Salamat Ali, Steve Hegedus, Syed Ismat Shah "Current-voltage analysis of annealing effects of poly(3-hexlythiophene) and phenyl-C61-butyric acid methyl ester organic solar cells", Journal of Photonics for Energy, 3(1), 2013, 032098.
11. T. Supasai, N. Rujisamphan, K. Ullrich, A. Chemseddine, Th. Dittrich "Formation of a passivating $CH_3NH_3PbI_3/PbI_2$ interface during moderate heating of $CH_3NH_3PbI_3$ layers", Applied Physics Letters, 103(18), 2013, 183906-183906-3.
12. Nopporn Rujisamphan, Fei Deng, Roy E. Murray, Chaoying Ni, S. Ismat Shah "Focused ion beam assisted investigations of Al interface in polythiophene:Fullerene solar cells", Solar Energy Materials and Solar Cells, 109, 56-62.
13. Boonchoat Paosawatyanyong, Nopporn Rujisamphan, Worawan Bhanthumnavin "Microwave Plasma Source for Fabrication of Micro- and Nano-Crystalline Diamond Thin Films for Electronic Devices", Japanese Journal of Applied Physics, 52(1S), 01AC05.
14. Deng Fei, N. Rujisamphan, Liu Chang, S. Ismat Shah, Ni Chaoying, Yoshinari Maezono, Stephen C, Hawkins, Chi P. Huynh "Grafting polymer coatings onto the surfaces of carbon nanotube forests and yarns via a photon irradiation process", Applied Physics Letters, 100, 2012, 213-109.

Other published Papers

1. Nopporn Rujisamphan, Roy E. Murray, S. Ismat Shah, Thidarat Supasai. "Effects of rf Power on Chemical and Physical Structure of Polytetrafluoroethylene Thin Films", Chiang Mai J. Sci. 2015: in press.
2. Roy Murray, Nopporn Rujisamphan, Haley Cramer, Salamat Ali, S. Ismat Shah "Current voltage analysis of silver nanoparticle doped organic photovoltaic devices", Photovoltaic Specialist Conference (PVSC), 2014 IEEE 40th.
3. Roy Murray, Patrick Reinecke, Nopporn Rujisamphan, Uli Würfel, S. Ismat Shah "Indium Free Transparent Electrodes with a Tungsten Oxide Hole Blocking Layer for Organic Photovoltaic Devices", Conference Paper.

Working papers

1. "Visualizing Nanoscale Phase Morphology for Understanding Photovoltaic Performance of PTB7:PC71BM Solar Cell" (submitted to ACS Applied Materials and Interface)
2. "Role of the RF Magnetron Sputtered Seed Layer Properties on Ultrasonic Spray Pyrolyzed ZnO Thin Films" (submitted to Materials Science and Engineering: B), work with Prof. M. Tomakin
3. "Ultrasonically sprayed-aerosol $CH_3NH_3PbI_3$ perovskite: Preparation and Characterization" work with Dr. T. Supasai