

## CURRICULUM VITAE CHANG-YONG NAM

Scientist  
Center for Functional Nanomaterials  
Brookhaven National Laboratory (BNL)  
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### Professional Preparation

Korea University	Seoul, Korea	Metallurgical Engineering	B.E.	1999
Korea Adv. Inst. Sci. Tech. (KAIST)	Daejeon, Korea	Materials Science & Engineering	M.S.	2001
University of Pennsylvania	Philadelphia, PA	Materials Science & Engineering	Ph.D.	2007
Brookhaven National Laboratory	Upton, NY	Center for Functional Nanomaterials	Postdoc	2007 – 2010

### Appointments

2016 – p	Scientist	Center for Functional Nanomaterials, Brookhaven National Laboratory
2013 – 2016	Associate Scientist	Center for Functional Nanomaterials, Brookhaven National Laboratory
2010 – 2013	Assistant Scientist	Center for Functional Nanomaterials, Brookhaven National Laboratory
2007 – 2010	Goldhaber Distinguished Fellow	Center for Functional Nanomaterials, Brookhaven National Laboratory
2017 – p	Lecturer	Dept. Materials Sci. & Chem. Engineering, Stony Brook University
2014 – p	Adjunct Professor	Dept. Materials Sci. & Chem. Engineering, Stony Brook University
2001 – 2002	Commissioned Researcher	Materials Research Div., Korea Institute of Science and Technology (KIST)
2001 Spring	Visiting Research Assistant	Brown University, Division of Engineering

### Awards/Distinctions

2011	Spotlight Award	Brookhaven National Laboratory
2007 – 2010	Goldhaber Distinguished Fellowship	Brookhaven National Laboratory
2003	Passed Ph.D. Qualifying Exam with Distinction	University of Pennsylvania, Dept. Mater. Sci. Eng.
2002 – 2007	Graduate Research Fellowship	University of Pennsylvania, Dept. Mater. Sci. Eng.
2001	Brain Korea 21 Financial Award for Abroad Research	Korea Advanced Institute of Science and Technology
1999 – 2001	Korean Government Scholarship	Korea Advanced Institute of Science and Technology
1999	Merit-based Scholarship	Korea University

### Research Synopsis

- Development and application of atomic layer deposition techniques toward the materials innovation in nanoelectronic sensors, solar energy conversion, catalysis, and hybrid nanocomposite technologies
- Materials processing and device physics in organic semiconductors, semiconductor nanowires, and two-dimensional materials

### Synergistic Activities

#### Grant Proposal Reviewer

- NSF, DMR Polymer Program, 2017
- ACS Petroleum Research Fund, 2016, 2017
- The Chinese University of Hong Kong, General Research Fund/Early Career Scheme, 2013
- U.S. Department of Energy Office of Basic Energy Sciences (BES) Grants, 2012
- U.S. Department of Energy Experimental Program to Stimulate Competitive Research (EPSCoR) Implementation Grants, 2011
- The City University of New York Research Award Program (PSC-CUNY), 2011

#### Symposium Organizer

11. Co-Organizer, Next Generation Semiconductor Materials Symposium, IUMRS-ICEM 2018 (Scheduled in August in 2018), Daejeon, Korea
10. Co-Organizer, Materials Science and Engineering Symposium, 2018 US-Korea Conference (Scheduled in August 2018), New York, NY
9. Program Committee, 2018 AVS ALD Conference (Scheduled in July 2018), Incheon, Korea
8. Co-Organizer, 2018 Functional Nanomaterials Symposium, The Minerals, Metals and Materials Society (TMS) 147<sup>th</sup> Annual Meeting & Exhibition (Scheduled in March 2018), Phoenix AZ
7. Co-Organizer, 2017 Functional Nanomaterials Symposium, The Minerals, Metals and Materials Society (TMS) 146<sup>th</sup> Annual Meeting & Exhibition, Feb. 2017, San Diego CA
6. Co-Organizer, International Symposium on Science and Technology of 2D Materials, Feb. 2017, University of Central Florida, Orlando FL
5. Co-Organizer, Workshop on “Two-Dimensional van der Waals Semiconductors for Energy Conversion Applications”, 2016 NSLS-II & CFN Joint Users’ Meeting, Upton NY

4. Technical Review Committee, 2015 – p, TechConnect Nanotech Conference
3. International Advisory Committee, 2015 – p, International Conference on Advances in Functional Materials (AFM)
2. Co-Organizer, Symposium K on “Hierarchically Structured Materials for Energy Conversion and Storage”, 2012 Materials Research Society (MRS) Fall Meeting November 2012, Boston MA
1. Organizing Chair, MRS-Joint Symposium on “Ion Beam and Nanomaterials”, XVIII International Materials Research Congress (IMRC), August 2009, Cancún, Mexico

#### *K-12 Outreach*

- Co-Organizer, Annual Math and Science Olympiad, Korea-American Scientists and Engineers Association NY Metropolitan Chapter, Queens College NY (2010 – p)
- Gave lectures at Research Scholar Program for High School Students, Garcia Center for Polymers at Engineered Interfaces, Stony Brook University (2017, 2014)

#### *Journal Article Reviewer (since 2007)*

Advanced Materials, Advanced Electronic Materials, Advanced Functional Materials, Advanced Energy Materials, Advanced Optical Materials, Advanced Materials Interfaces, ChemCatChem, Physica Status Solidi, Nano Letters, ACS Nano, ACS Applied Materials & Interfaces, Macromolecules, ACS Sustainable Chemistry & Engineering, Chemistry of Materials, ACS Energy Letters, ACS Omega, Langmuir, Journal of Physical Chemistry, Nanoscale, RSC Advances, Journal of Materials Chemistry, PCCP, ChemPhysChem, ChemCom, Organic Electronics, Applied Physics Letters, Journal of Applied Physics, AIP Advances, Nanotechnology, Scientific Reports

#### *Professional Society Affiliation*

- The Minerals, Metals and Materials Society (TMS): Committee Member (2016 – p) & an Elected JOM advisor (2017 – p), Functional Materials Division, Nanomaterials Committee
- Materials Research Society (MRS)
- American Vacuum Society (AVS)
- Korean-American Scientists and Engineers Association (KSEA): Treasurer, then Auditor of New York Metropolitan Chapter (2010 – p)

#### **Course Development/Teaching**

- ESM 542, Modern Electron Microscopy, 3-credit core graduate course, Stony Brook University, Department of Materials Science and Chemical Engineering, 2017 Spring Semester (also scheduled in 2018)

#### **Supervision/Mentoring**

- *Postdocs (2)*: Son Hoang, 2013 – 2014, currently a Postdoctoral Fellow at University of Connecticut; Mingfeng Wang, 2012, currently an Assistant Professor at Nanyang Tech. Univ., Singapore
- *Ph.D. (2)*: Lei Wang (Stony Brook U., Mater. Sci. Chem. Eng.), 2016 – 2017, currently a Ph.D. student at Stony Brook U./BNL Chemistry; Chang-Yeol Cho, Visiting Ph.D. student (Sogang U., Korea), 2012 – 2013, currently a research at KRICT
- *M.S. (3)*: Ashwanth Subramanian (Stony Brook U., Mater. Sci. Chem. Eng.), 2017 – p; Sulman Khan (Stony Brook U., Mater. Sci. Chem. Eng.), 2017; Xinyi Ye (Stony Brook U., Mater. Sci. Chem. Eng.), 2016 – 2017, currently a master student at Stony Brook U. Applied Mathematics & Statistics
- *Undergraduate (4)*: Brandon Yalin (Stony Brook U., Physics), 2016 – p; James Townley, Summer Undergrad Laboratory Intern (Univ. Penn., Mater. Sci. Eng.), 2016, currently a Ph.D. student at Georgia Tech.; Hugh Bullen (Stony Brook U., Mater. Sci. Chem. Eng.), 2012 – 2014, currently a Ph.D. student at Cornell U, Chem. Eng.; Jovan Kamcev (Stony Brook U., Mater. Sci. Chem. Eng.), 2011 – 2012, formerly a NSF Graduate Fellow/Ph.D. student at UT Austin, Chem. Eng., currently a Postdoc at UC Berkeley, Chem. Eng.
- *Visiting Faculty (1)*: Mohammad Sohel, Visiting Faculty (Associate Professor, CUNY Hostos Community College), Summer 2014
- *Ph.D. Dissertation Committee (8, Stony Brook Univ., Mater. Sci. Chem. Eng.)*: Shuhao Zhang, 2017 – p; Zhenhua Yang, 2016 – 2017; Danhua Yan, 2016 – p; Xiaojun Chan, 2015 – p; Mani Sen, 2017; Hongfei Li, 2016; Levent Sandogdular, 2013 – 2016; Cheng Pan, 2010 – 2013

#### **Research Support and Grant Activities**

##### *Current*

- Team Member, U.S. Department of Energy Office of Science for the CFN, BNL, Contract No. DE-SC0012704, 10/01/2016 – 09/30/2017 (~\$20M/yr, continuously renewed annually).
- Team Member, Global Research Laboratory Grant, National Research Foundation of Korea, “Development of Flexible and Printed Perovskite/Organic Integrated Photovoltaic Modules with Ultrahigh Efficiency, Long-Term Stability and Large-Area Reproducibility”, 06/01/2017 – 02/28/2023 (\$2.48M)
- PI, CFN Intra-Department Grant, BNL, “High-Performance Greenhouse Gas Sensing Architecture Based on Metal Oxide Nanostructures Derived from Polymer Nanotemplates”, 01/01/2018 – 12/31/2019 (\$300K)

### *Past*

PI, CFN Director's Research Funding, BNL, "Utilization of Resonant Energy Transfer in Ultrathin Si Solar Cells", 2012 – 2014 (\$300K).

### *Pending*

PI, NSF, "Collaborative Research: Investigation of Ultra-High Elastic Energy Storage Hybrid Nanocomposites via Sequential Infiltration Synthesis and In-situ Micromechanical Deformation", \$460K, 05/07/2018 – 05/06/2021

Co-PI, NSF, "Additive Manufacturing of Multiscale Hierarchical Composite Materials Toward Zero Energy Building", \$300K, 06/01/2018 – 05/31/2021

PI, Stony Brook University/BNL Seed Funding Program in Energy Systems for Sustainability Research, "Scalable Nano-Engineered Catalysts for Ultra-Stable Polymer Hydrogen Fuel Cells", \$96K, 05/01/2018 – 04/30/2019

### **Research Collaborators**

C.T. Black (BNL), J. Concepcion (BNL), M. Cotlet (BNL), S. Darling (Argonne National Lab), Y.F. Ding (U. Colorado), C.M. Drain (Hunter College), M. Eisaman (BNL/Stony Brook U.), D. Englund (MIT), P.X. Gao (U. Conn.), R.B. Grubbs (Stony Brook U.), D. Hwang (Stony Brook U.), J.W. Hwang (Ohio State U.), K.-S. Hwang (KIST), I.N. Ivanov (ORNL), Y.W. Jung (U. Central Florida), J.Y. Kim (UT Dallas), T.J. Kim (Stony Brook U.), D.K. Ko (NJIT), T. Koga (Stony Brook U.), S. Kalinin (ORNL), J. Kymissis (Columbia U.), E.S. Lee (NJIT), J.W. Lee (KAIST), S.W. Lee (U. Conn.), H.Q. Lin (U. Buffalo), M.Z. Liu (BNL), J.H. Moon (Sogang U.), C. Nuckolls (Columbia U.), D. Nykypanchuk (BNL), B.M. Ocko (BNL), R. Pindak (BNL), M. Rafailovich (Stony Brook U.), M. Sfeir (BNL), Y. Shi (Stevens Inst. Tech.), E. Stach (U. Penn), A. Stein (BNL), D. Su (BNL), P.W. Sutter (U. Nebraska, Lincoln), A.D. Talyer (Yale U.), J. Welch (U. Albany), N.B. Wisinger (ORNL), S. Wong (BNL/Stony Brook U.), Q. Wu (BNL), K. Yager (BNL)

### **Research Advisors**

Postdoctoral: Charles T. Black (Brookhaven National Laboratory)

Ph.D.: John (Jack) E. Fischer (University of Pennsylvania, deceased)

M.S.: Dang-Moon Wee (Korea Advanced Institute of Science and Technology)

### **Invited Seminars/Talks/Lectures**

38. IUMRS-ICEM 2018, Scheduled in August 2018, Daejeon Korea, Invited Talk, "Fully CMOS-Compatible Synthesis and Photodetector-Integration of Ultrathin, Parallel-Aligned ZnO Nanowire Arrays by Infiltration Synthesis"
37. Auburn University, Dept. Physics, Scheduled in 2018 Spring Semester, Auburn AL, Invited Seminar, "TBA"
36. Brookhaven National Laboratory, Center for Functional Nanomaterials, Scheduled in March 2018, Invited Colloquium, "TBA"
35. 2018 Micro- and Nanotechnology Sensors, Systems, and Applications Conference, SPIE Defense, Security, and Sensing Symposium (DSS), Scheduled in April 2018, Orlando FL, Invited Talk, "Application of Resonant Energy Transfer for Enhanced Light Harvesting in Two-Dimensional Layered Semiconductors and Ultrathin Si Solar Cells"
34. Naval Research Laboratory, August 2017, Washington DC, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Material Infiltration by Atomic Layer Deposition"
33. 2017 US-Korea Conference, August 2017, Washington DC, Invited Talk, "Ultrahigh Elastic Strain Energy Storage in Organic-Inorganic Hybrid Polymer Nanopillars Generated by Metal Oxide Infiltration Synthesis"
32. University of Colorado Boulder, Dept. Mechanical Engineering, July 2017, Boulder CO, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Material Infiltration by Atomic Layer Deposition"
31. Stony Brook University, The Garcia Center for Polymers at Engineered Interfaces, June 2017, Stony Brook NY, Invited Lecture, "Introduction to Organic and Hybrid Solar Cells"
30. Stevens Institute of Technology, Dept. Mechanical Engineering, May 2017, Hoboken NJ, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis"
29. KSEA Northeast Regional Conference, April 2017, Newark NJ, Invited Talk, "Application of Resonant Energy Transfer for Enhanced Light Harvesting in Ultrathin Inorganic Solar Cell and Two-Dimensional Layered Semiconductors"
28. University of Central Florida, NanoScience Technology Center, Orlando FL, February 2017, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis"
27. University of Texas at Dallas, Dept. Materials Science and Engineering, Richardson TX, August 2016, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis"
26. 2016 US-Korea Conference, August 2016, Dallas TX, Invited Talk, "Application of Resonant Energy Transfer for Enhanced Light Harvesting in Ultrathin Inorganic Solar Cell and Two-Dimensional Layered Semiconductors"
25. Oak Ridge National Laboratory, Center for Nanophase Materials Sciences, June 2016, Oak Ridge TN, Invited Seminar, "Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures via Infiltration Synthesis"
24. KSEA Northeast Regional Conference, April 2016, Englewood NJ, Invited Talk, "Overview of Device Nanostructuring for Efficient Polymer and Hybrid Solar Cells"
23. 2016 TMS 145<sup>th</sup> Annual Meeting & Exhibition, Feb. 2016, Nashville TN, Invited Talk, "Inorganic Infiltration in Polymer Templates via Atomic Layer Deposition: Pathway for Synthesis of Hybrid Materials and Direct Patterning Inorganic Nanostructures"
22. New Jersey Institute of Technology, Dept. Electrical & Computer Eng., Jan. 2016, Newark NJ, Department Seminar, "Device Nanostructuring for Efficient Polymer and Hybrid Solar cells"

21. Stony Brook University, Dept. of Mater. Sci. Eng., Oct. 2015, Stony Brook NY, Department Colloquium, “Application of Nanofabrication for Energy Conversion and Electronic Devices”
20. University of Connecticut, Dept. of Mater. Sci. Eng., April 2015, Storrs CT, Department Seminar, “Direct Patterning of Arbitrary Metal Oxide Nanostructures Using Polymer Template Nanoreactors”
19. Stony Brook University, Dept. of Mater. Sci. Eng., December 2014, Stony Brook NY, Department Colloquium, “Nanostructuring Materials for Energy Applications”
18. Korea Institute of Science and Technology (KIST), Center for BioMircoSystems, October 2014, Seoul, Korea, Invited Seminar, “Infiltration Synthesis of Metal Oxide Nanostructures in Polymer Templates”
17. Stony Brook University, The Garcia Center for Polymers at Engineered Interfaces, July 2014, Stony Brook NY, Invited Lecture, “Overview of Organic Solar Cells”
16. Nanotech 2014, June 2014, National Harbor MD (Washington DC), Invited Talk, “Metal Oxide Nanopatterning via Infiltration Synthesis in Polymer Templates”
15. 2014 Advanced Energy Conference, April 2014, Albany NY, Invited Talk, “Charge Transport in Organic Polymer Solar cells”
14. Stony Brook University, Dept. of Mater. Sci. and Eng., Feb. 2014, Stony Brook NY, Invited Seminar, “Infiltration Synthesis of Metal Oxide Nanostructures in Polymer Templates”
13. 2013 US-Korea Conference, August 2013, East Rutherford NJ, Invited Talk, “Infiltration Synthesis of Metal Oxide Nanopatterns on Diblock Copolymer Templates”
12. 2012 US-Korea Conference, August 2012, Los Angeles CA, Invited Talk, “Recent Progress in Organic Bulk Heterojunction Solar Cells”
11. City University of New York, Queens College, Dept. of Chemistry and Biochemistry, March 2011, Flushing NY, Department Seminar, “Device Nanostructuring for Efficient Organic Blend Solar Cells”
10. Brookhaven National Laboratory, Center for Functional Nanomaterials, June 2010, Upton NY, Invited Seminar, “Nanostructuring for Efficient Energy Conversion Devices”
9. Temple University, Dept. of Mech. Eng., May 2010, Philadelphia PA, Invited Seminar, “Nanostructuring for Efficient Energy Conversion Devices”
8. KSEA Northeast Regional Conference, May 2010, Somerset NJ, Invited Talk, “Nanostructured Contacts for Efficient Plastic Solar Cells”
7. KAIST, Graduate School of EEWS, Nov. 2009, Taejon, Korea, Invited Seminar, “Nanostructuring for Efficient Plastic Solar Cells and Thermoelectric Devices”
6. PennEnergy Colloquium, Nov. 2009, University of Pennsylvania, Philadelphia PA, Invited Seminar, “Nanostructuring for High Performance Organic Bulk Heterojunction Solar Cells”
5. NLSL-CFN User Meeting, May 2009, BNL, Upton NY, Invited Talk, “High Performance Air-Processed Polymer-Fullerene Solar Cells Having Nanostructured Electrical Contacts”
4. Columbia University Nanocenter Summer Retreat, April 2009, Short Hills NJ, Invited Talk, “High Performance All Air-Processed Polymer-Fullerene Solar Cells”
3. Korea University, Dept. of Mater. Sci. and Eng., November 2008, Seoul, Korea, “Invited Seminar”, “Structure-Property Relations in Nanoscale: Polythiophene-Methanofullerene Solar Cells and Gallium Nitride Nanowires”
2. Pohang University of Science and Technology (POSTECH), Dept. of Mater. Sci. and Eng., Nov. 2008, Pohang, Korea, Invited Seminar, “Structure-Property Relations in Nanoscale: Polythiophene-Methanofullerene Solar Cells and Gallium Nitride Nanowires”
1. Brookhaven National Laboratory, Center for Functional Nanomaterials, Jan. 2007, Upton NY, Invited Seminar, “Gallium nitride nanowires: Polar Surface Controlled Growth, Ohmic Contact Patterning by Focused Ion Beam Induced Direct Pt Deposition; Variable Range Hopping, and Resonant Electromechanical Properties”

**Full List of Publications:** 55 refereed publications; 4 under review/submitted; 8 in preparation; 1 US patent, 7 US patent applications, 5 Record of Inventions

†: Corresponding Author

<https://scholar.google.com/citations?user=I0DT2zIAAAAJ&hl=en>

#### Peer-Reviewed Articles

##### Atomic Layer Deposition/Infiltration Synthesis

59. L. Wang, D. Yan, X. Ye, K. Kisslinger, M. Liu, **C.-Y. Nam**†, “Improved Stability and Performance of Visible Photoelectrochemical Water Splitting on Solution-Processed Organic Semiconductor Thin Films by Ultrathin Metal Oxide Passivation”, under revision in *Chemistry of Materials*
58. W. Tang, X. Lu, S. Du, S. Hoang, S. Wang, **C.-Y. Nam**†, P.-X. Gao†, “Ceria-Based Nanoflake Array Monolith Catalysts Integrated on Three-Dimensional Cordierite Substrates for Efficient Low-Temperature Catalytic Oxidation”, under review in *Journal of Materials Chemistry C*
57. S. Hoang, X. Lu, W. Tang, S. Wang, S. Du, **C.-Y. Nam**, Y. Ding, P.-X. Gao†, “Ultra-low Pt Diesel Oxidation Catalysts using Titania Nanowire Array Support”, under review in *Catalysis Today*, DOI: 10.1016/j.cattod.2017.11.019 (2017)
56. K. Dusoe†, X. Ye, K. Kisslinger, A. Stein, S.-W. Lee, **C.-Y. Nam**†, “Ultra-high elastic strain energy storage in metal-oxide-infiltrated patterned hybrid polymer nanocomposites”, *Nano Letters*, DOI: 10.1021/acs.nanolett.7b03238 (2017)

55. **C.-Y. Nam**†, A. Stein, “Extreme Carrier Depletion and Super-Linear Photoconductivity in Ultrathin Parallel-Aligned ZnO Nanowire Array Photodetectors Fabricated by Infiltration Synthesis”, *Advanced Optical Materials*, DOI: **10.1002/adom.201700807** (2017)
54. J. Kestell†, K. Mudiyansele, X. Ye, **C.-Y. Nam**, D.J. Stacchiola, J.T. Sadowski, J.A. Boscoboinik†, “Stand-Alone Polarization-Modulation Infrared Reflection Absorption Spectroscopy Instrument Optimized for the Study of Catalytic Processes at Elevated Pressures”, *Review of Scientific Instruments* **88**, 105109 (2017)
53. X. Ye, J. Kestell, K. Kisslinger, M. Liu, R.B. Grubbs, J.A. Boscoboinik, **C.-Y. Nam**†, “Effects of residual solvent molecules facilitating the ZnO infiltration synthesis in a non-reactive polymer”, *Chemistry of Materials* **29**, 4535 (2017)
52. V.R. Manfrinato, A. Stein, L. Zhang, **C.-Y. Nam**, K.G. Yager, E.A. Stach†, C.T. Black†, “Aberration-Corrected Electron Beam Lithography at the One Nanometer Length scale”, *Nano Letters* **17**, 4562 (2017)
51. H.-J. Lin, J.P. Baltrus, H. Gao, Y. Ding, **C.-Y. Nam**, P. Ohodnicki, P.-X. Gao†, “Perovskite Nanoparticle Sensitized Ga<sub>2</sub>O<sub>3</sub> Nanorod Arrays for CO Detection at High Temperature”, *ACS Applied Materials & Interfaces* **8**, 8880 (2016)
50. **C.-Y. Nam**†, A. Stein, K. Kisslinger, C.T. Black, “Electrical and Structural Properties of ZnO Synthesized via Infiltration of Lithographically-Defined Polymer Templates”, *Applied Physics Letters* **107**, 103206 (2015)
49. **C.-Y. Nam**†, A. Stein, K. Kisslinger, “Direct fabrication of high aspect-ratio metal oxide nanopatterns via sequential infiltration synthesis in lithographically-defined SU-8 templates”, *Journal of Vacuum Science and Technology B* **33**, 06F201 (2015)
48. M. Liu†, **C.-Y. Nam**, C. T. Black, J. Kamcev, L. Zhang, “Enhancing water splitting activity and chemical stability of zinc oxide nanowire photoanodes with ultrathin titania shells”, *Journal of Physical Chemistry C* **117**, 133396 (2013)
47. J. Kamcev, D. S. Germack, D. Nykypanchuk, R. B. Grubbs, **C.-Y. Nam**†, C. T. Black†, “Chemically enhancing block copolymers for block-selective synthesis of self-assembled metal oxide nanostructures”, *ACS Nano* **7**, 339 (2013)

*Organic/Hybrid Photovoltaics and Electronics*

- 46 Z. Yang, M. Moffa, Y. Liu, H. Li, L. Persano, A. Camposeo, R. Saija, M.A. Lati, O.M. Marggo, D. Pisignano†, **C.-Y. Nam**, E. Zussman, M.H. Rafailovich†, “Conjugated Polymer/Fullerene Hybrid Fibers for Bulk-Heterojunction Organic Solar Cells”, under review in *Journal of Materials Chemistry A* (2017)
45. H. Li, Z. Yang, C. Pan, S.K. Satija, D. Xu, D. Gersappe, **C.-Y. Nam**†, M.H. Rafailovich†, “A new strategy to engineer polymer bulk heterojunction solar cells with thick active layers via self-assembly of tertiary columnar phase”, *Nanoscale* **9**, 11511 (2017)
44. N. Jiang, L. Sendogdular, M. Sen, M.K. Endoh, T. Koga†, M. Fukuto, B. Akgun, S.K. Satija, **C.-Y. Nam**†, “Novel effects of compressed CO<sub>2</sub> molecules on structural ordering and charge transport in conjugated poly(3-hexylthiophene) thin films”, *Langmuir* **32**, 10851 (2016)
43. T. Goh, J.-S. Huang, K. Yager, M.Y. Sfeir, **C.-Y. Nam**, X. Tong, L.M. Guard, P.R. Melvin, F. Antonio, B. Bartolome, M. Lee, N. Hazar†, A.D. Taylor†, “Quaternary Organic Solar Cells Enhanced by Cocrystalline Squaraines with Power Conversion Efficiencies >10%”, *Advanced Energy Materials* **6**, 1600660 (2016)
42. S. Hoang, A. Ashraf, M.D. Eisaman, D. Nykypanchuk†, **C.-Y. Nam**†, “Enhanced Photovoltaic Performance of Ultrathin Si Solar Cells via Semiconductor Nanocrystal Sensitization: Energy Transfer vs. Optical Coupling Effects”, *Nanoscale* **8**, 5873 (2016)
41. Y. Zhong, M.T. Tuan, R. Chen, G. Purdum, P.P. Khlyabich, M. Sezen, S. Oh, H. Zhu, B. Fowler, B. Zhang, W. Wang, **C.-Y. Nam**, M.Y. Sfeir, C.T. Black, M.L. Steigerwald, Y.-L. Loo, H. Li†, S. Xiao†, F. Ng†, X.-Y. Zhu†, C. Nuckolls†, “Graphene nanoribbon as electron acceptors in high performance, bulk heterojunction solar cells”, *Nature Communications* **6**, 8242 (2015)
40. H. Hlaing†, C.-H., Kim, F. Carta, **C.-Y. Nam**, R. Barton, N. Petrone, J. Hone, I. Kymissis†, “Low-voltage organic electronics based on gate-tunable injection barrier in vertical graphene-organic semiconductor heterostructure”, *Nano Letters* **15**, 69 (2015)
39. X. Lu†, H. Hlaing, **C.-Y. Nam**, K. Yager, C.T. Black, B.M. Ocko†, “Orientation and Performance of nanoimprinted polymer-based blend thin film solar cells”, *Chemistry of Materials* **27**, 60 (2015)
38. **C.-Y. Nam**†, “Ambient air processing causes light soaking effects in inverted organic solar cells having conjugated polyelectrolyte electron transfer layer”, *Journal of Physical Chemistry C* **118**, 27219 (2014)
37. Y. Zhong, M.T. Trinh, R. Chen, W. Wang, B. Kumar, **C.-Y. Nam**, M.Y. Sfeir, C.T. Black, M.L. Steigerwald, S.X. Xiao†, F. Ng†, X.Y. Zhu†, C. Nuckolls†, “Efficient organic solar cells with helical perylene diimide electron acceptors”, *Journal of the American Chemical Society* **136**, 15215 (2014)
36. Y.S. Park, Q. Wu, **C.-Y. Nam**, R.B. Grubb†, “Polymerization of tellurophene derivatives via microwave-assisted palladium-catalyzed ipso-arylation polymerization”, *Angewandte Chemie International Edition* **53**, 10691 (2014)
35. Y.S. Park, T.S. Kale, **C.-Y. Nam**, D. Choi, R.B. Grubbs†, “Effects of heteroatom substitution in conjugated heterocyclic compounds on photovoltaic performance: from sulfur to tellurium”, *Chemical Communications* **50**, 7964 (2014)
34. F.E. Camino, **C.-Y. Nam**, Y.T. Pang, J. Hoy, M.D. Eisaman, C.T. Black, M.Y. Sfeir†, “Characterization of plasmonic hole arrays as transparent electrical contacts for organic photovoltaics using high brightness fourier transform methods”, *Journal of Modern Optics* **61**, 1735 (2014)
33. J. Li, X. Chen, W. Xu, **C.-Y. Nam**†, Y. Shi†, “TiO<sub>2</sub> nanofiber solid state dye sensitized solar cell with thin TiO<sub>2</sub> hole blocking layer prepared by atomic layer deposition”, *Thin Solid Films* **536**, 275 (2013)

32. M. J. Jurow, B. A. Brian, C. Pabon, E. DiMasi†, **C.-Y. Nam**, C. T. Black, C. M. Drain†, “Controlling morphology and molecular packing of alkane substituted phthalocyanine blend bulk heterojunction solar cells”, *Journal of Material Chemistry A* **1**, 1557 (2013)
31. **C.-Y. Nam**†, “Facile determination of bulk charge carrier concentration in organic semiconductors: Out-of-plane hopping transport characteristics in semi-crystalline polythiophene”, *Journal of Physical Chemistry C* **116**, 23951 (2012)
30. H. Hlaing, X. Lu, **C.-Y. Nam**, B. M. Ocko†, “Water-vapor-assisted nanoimprinting of PEDOT:PSS thin film”, *Small* **8**, 3443 (2012),
29. D. E. Johnston, K. G. Yager, **C.-Y. Nam**, B. M. Ocko, C. T. Black†, “One-volt operation of high-current vertical channel polymer semiconductor field-effect transistors”, *Nano Letters* **12**, 4148 (2012)
28. J. E. Allen, K.G. Yager, H. Hlaing, **C.-Y. Nam**, B. M. Ocko, C. T. Black†, “Implementing nanometer-scale confinement in organic semiconductor bulk heterojunction solar cells”, *Journal of Photonics for Energy* **2**, 021008 (2012)
27. **C.-Y. Nam**†, Y. Qin, Y. S. Park, H. Hlaing, X. Lu, B. M. Ocko, C. T. Black, R. B. Grubbs†, “Photocrosslinkable azide-functionalized polythiophene for thermally stable bulk heterojunction solar cells”, *Macromolecules* **45**, 2338 (2012)
26. **C.-Y. Nam**†, Q. Wu, D. Su, C.-Y. Chiu, N. J. Tremblay, C. Nuckolls, C. T. Black, “Nanostructured electrodes for organic bulk heterojunction solar cells: model study using carbon nanotube dispersed polythiophene-fullerene blend devices”, *Journal of Applied Physics* **110**, 604307 (2011)
25. J. E. Allen, K. G. Yager, H. Hlaing, **C.-Y. Nam**, B. M. Ocko, C. T. Black†, “Enhanced charge collection in confined bulk heterojunction organic solar cells”, *Applied Physics Letters* **99**, 163301 (2011)
24. A. Varotto, **C.-Y. Nam**, I. Radivojevic, J. Tome, J. A. S. Cavaleiro, C. T. Black†, C. M. Drain†, “Phthalocyanine blends improve bulk heterojunction solar cells”, *Journal of the American Chemical Society* **132**, 2552 (2010)
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