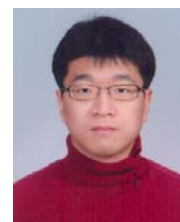


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Education

- 2005~2010 Ph.D. in Chemical Engineering, POSTECH, Pohang, Korea
Thesis title: "High performance organic opto-electronic devices : Fabrication and theoretical analysis"
Thesis advisor: Chan Eon Park, Ph.D.
- 1999~2005 B.S. in Chemical Engineering, POSTECH, Pohang, Korea

Research Projects

- Organic thin-film transistors using soluble organic semiconductors
 - Self-assembly of functionalized acenes during solution-process (thin film and single crystal transistor)
 - Dielectric surface modification for efficient self-assembly of organic semiconductor blends
 - Fabrication of polymeric transistors having environmental stability by achieving self-passivated structure
 - Comparative studies on the effect of π -stacking area and distance on the FET mobility of organic semiconductors
- Organic photo-sensor using soluble organic semiconductors
 - Development of all organic solution processed photo-sensor using soluble functionalized acene derivatives
- Organic photovoltaic devices using soluble organic semiconductors
 - Fabrication of organic BHJ solar cells based on newly synthesized polythiophene/functionalized acene derivatives with wide and narrow band gap blended with PCBM
 - Fabrication of organic BHJ solar cells based on amorphous fullerene / P3HT derivatives to achieve thermally stable nano-morphology
 - Comparative studies on the effect of mobility and exciton diffusion length on the photovoltaic performance of organic solar cells

Techniques

- Tools for electronics (I-V and C-V measurements, Time-of-Flight mobility measurements, UV-lithography, surface modification using SAMs, extraction of contact resistance, UPS)
- Synchrotron based thin-film characterization (X-ray diffraction, X-ray reflectivity, XPS, NEXAFS)
- Common thin-film characterization (AFM, TEM, SEM, FT-IR, UV-vis Spectroscopy, Ellipsometry)
- Basic mathematical skills for theoretical analysis

Publications

First Author

- [1] **D. S. Chung**, J. W. Park, W. M. Yun, H. Cha, Y.-H. Kim, S.-K. Kwon, C. E. Park, "Solution-processed organic photovoltaic cells with anthracene derivatives", *ChemSusChem*, 3, 742 (2010).
- [2] **D. S. Chung**, H. Kong, W. M. Yun, H. Cha, H.-K. Shim, C. E. Park, "Effects of selenophene

substitution on the mobility and photovoltaic efficiency of polyquaterthiophene-based organic solar cells”, *Org. Electron.* 11, 899 (2010).

- [3] **D. S. Chung**, J. W. Park, J.-H. Park, D. Moon, G. H. Kim, H.-S. Lee, D. H. Lee, H.-K. Shim, S.-K. Kwon, C. E. Park, “High Mobility Organic Single Crystal Transistors Based on Soluble Triisopropylsilylethynyl Anthracene Derivatives”, *J. Mater. Chem.* 20, 524 (2010).
- [4] **D. S. Chung**, J. W. Park, S.-O. Kim, K. Heo, C. E. Park, M. Ree, Y.-H. Kim, S.-K. Kwon, “Alternating Copolymers Containing Bithiophene and Dialkoxynaphthalene for the applications to Field Effect Transistor and Photovoltaic Cell : Performance and Stability”, *Chem. Mater.*, 21, 5499 (2009).
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- [6] **D. S. Chung**, W. M. Yun, S. Nam, S. H. Kim, C. E. Park, J. W. Park, Y.-H. Kim, S.-K. Kwon, “All-organic solution-processed two-terminal transistors fabricated using the photoinduced p-channels”, *Appl. Phys. Lett.* 94, 043303 (2009).
- [7] **D. S. Chung**, D. H. Lee, C. Yang, K. Hong, C. E. Park, J. W. Park, S.-K. Kwon, “Origin of high mobility within an amorphous polymeric semiconductor: Space-charge-limited current and trap distribution”, *Appl. Phys. Lett.* 93, 033303 (2008).
- [8] **D. S. Chung**, S. J. Lee, J. W. Park, D. B. Choi, D. H. Lee, J. W. Park, S. C. Shin, Y.-H. Kim, S.-K. Kwon, C. E. Park, “High performance amorphous polymeric thin-film transistors based on poly[(1,2-bis-(2'-thienyl)vinyl-5',5''-diyl)-alt-(9,9-dioctylfluorene-2,7-diyl)] semiconductors”, *Chem. Mater.* 20, 3450 (2008).
- [9] J. W. Park, **D. S. Chung**, I.-N. Lee, Y. Wei, D. H. Lee, **H. Kong**, H.-K. Shim, Y.-H. Kim, C. E. Park, and S.-K. Kwon, “A High-Performance Polymeric Semiconductor with High Aromatic Density: poly[3,3''-didodecylsextiophene]”, submitted to *Chem. Mater.* (2009). (**co-first author)
- [10] S.-O. Kim, **D. S. Chung**, H. Cha, J. W. Jang, Y.-H. Kim, J.-W. Kang, Y.-S. Jeong, C. E. Park, S.-K. Kwon, “Thermally stable organic bulk heterojunction photovoltaic cells incorporating an amorphous fullerene derivative as an electron acceptor”. submitted to *Org. Electron.* (2009). (**co-first author)
- [11] S.-O. Kim, **D. S. Chung**, H. Cha, J. W. Jang, Y.-H. Kim, J.-W. Kang, Y.-S. Jeong, C. E. Park, S.-K. Kwon, “Alternating copolymers based on alkoxy-naphthalene and benzothiadiazole for use in high performance bulk heterojunction organic solar cells”. submitted to *Chem. Mater.* (2010). (**co-first author)
- [12] **D. S. Chung**, J. W. Park, S.-K. Kwon, C. E. Park, “Thermally stable amorphous polymeric semiconductor as an electron donor material for organic tandem solar cells”, manuscript in preparation (2010).
- [13] **D. S. Chung**, J.-H. Park, H. Cha, H.-K. Shim, C. E. Park, “Effects of fullerene-selective solvent addition on the photovoltaic performances of polymer solar cells”, manuscript in preparation (2010)

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- [14] J. Jang, S. Nam, **D. S. Chung**, S. H. Kim, W. M. Yun, K. Hong, C. E. Park, “Enhanced Performance and Stability of N, N'-Ditridecyl Perylene Diimide-Based n-Type Transistors by Thermal Annealing with High TG Polymer/SiO₂ Bilayer Gate Dielectrics and Their Complementary Inverters”, *Adv. Func. Mater.* in press (2010).
- [15] J.-H. Park, **D. S. Chung**, D. H. Lee, H. Kong, I. H. Jung, M.-J. Park, N. S. Cho, C. E. Park, H.-K. Shim, “New anthracene-thiophene-based copolymers that absorb across the entire UV-vis spectrum for application in organic solar cells”, *Chem. Comm.* 46, 1863 (2010).

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- [19] J. W. Park, D. H. Lee, **D. S. Chung**, D. M. Kang, Y.-H. Kim, C. E. Park, S.-K. Kwon, *Macromolecules*, 43, 2118 (2010)
- [20] H. Cha, H. Kong, **D. S. Chung**, W. M. Yun, T. K. An, J. Hwang, S.-K. Kwon, H. -K. Shim, C. E. Park, *Org. Electron.* in press (2010)
- [21] J.-H. Kwon, J.-Y. An, H. Jang, S. Choi, **D. S. Chung**, M. J. Lee, H. Cha, J.-H. Park, C. E. Park, Y.-H. Kim, under revision, *Chem. Mater.* (2010)
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selective self-organization technique”, *Appl. Phys. Lett.* 93, 113306 (2008).

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Presentations (International Symposium)

- [1] **D. S. Chung**, J. W. Park, S.-K. Kwon, C. E. Park, “Solution-processed organic photovoltaic cells with anthracene derivatives”, Materials Research Society Fall Meeting, Boston, USA (November 2009)
- [2] **D. S. Chung**, H. Kong, H.-K. Shim, C. E. Park, “Effects of selenophene substitution on the mobility and photovoltaic efficiency of polyquaterthiophene-based organic solar cells”, KJF International Conference on Organic Materials for Electronic and Photonics, Jeju, Korea (August 2009)
- [3] **D. S. Chung**, S. J. Lee, S.-K. Kwon, C. E. Park, “High Performance Amorphous Polymeric Thin-Film Transistors”, *SPIE Optics/Photonics*, San Diego, USA (August 2008) [**Oral presentation**]
- [4] **D. S. Chung**, J. W. Park, S. Y. Yang, D. H. Lee, S. H. Kim, S. Nam, S.-K. Kwon, C. E. Park, “High Mobility Organic Single-Crystal Transistors Based on soluble Triisopropylsilylethynyl Anthracene Derivatives and Solid-State Packing”, Materials Research Society Spring Meeting, San Francisco, USA (April 2008)
- [5] **D. S. Chung**, S. Y. Yang, C. Im, C. E. Park, “Time-of-flight Technique with Polymeric Charge Blocking Layer for Measuring Charge Carrier Mobility of poly(3-hexylthiophene) with High Dark Currents”, Materials Research Society Spring Meeting, San Francisco, USA (April 2007) [**Oral presentation**]
- [6] **D. S. Chung**, S. Y. Yang, C. Im, C. E. Park, “Charge transport study of P3HT by Blocking layer Time-of-Flight”, IUPAC International Symposium on Advanced Polymers for Emerging Technologies, Pusan, Korea (October 2006)

References

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