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# Hyung Jun Koo

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## EDUCATIONAL BACKGROUND

**B.S.** (1997. 3. ~ 2004. 2. ) Chemical and Biological Engineering, Seoul National University (SNU)

**M.S.** (2004. 3. ~ 2006. 2. ) Chemical and Biological Engineering, Seoul National University (SNU)

Thesis: Effect of UV Treatment on Silsesquioxane-Bsed Films

Advisor: Prof. Kook-heon Char

**Ph.D.** (2007. 8. ~ ) Chemical and Biomolecular Engineering, North Carolina State University (NCSU)

Advisor: Prof. Orlin D. Velev

## RESEARCH CAREER

**Researcher** (2006. 3 ~ 2007. 5 ) Korea Institute of Science and Technology (KIST)

Theme: Fabrication of high efficiency dye-sensitized solar cells (DSSC)

Supervisor: Nam-Gyu Park

## RESEARCH EXPERIENCE

- Fabrication and characterization of low-dielectric nanoporous silicate films
- Synthesis of UV responsive silicate precursor and application of micro-size patterning
- Sol-gel chemistry
- Synthesis of TiO<sub>2</sub> nanoparticle by auto-clave reaction
- Fabrication of high efficiency photovoltaic cells
- Fabrication of microfluidic devices
- Electrochemistry

## PROFESSIONAL ACTIVITIES

Member, The Polymer Society of Korea

2004 ~ 2007

Member, Korean Institute of Chemical Engineers

2004 ~ 2006

## PUBLICATION

1. "Size-dependent scattering efficiency in dye-sensitized solar cell", **H.-J. Koo**, J. Park, B. Yoo, K. Yoo, K. Kim, N.-G. Park, *Inorganica Chimica Acta*, 361, 677-683 (2008).
2. "On the I-V measurement of dye-sensitized solar cell: Effect of cell geometry on photovoltaic parameters", J. Park, **H.-J. Koo**, B. Yoo, K. Yoo, K. Kim, W. Choi, N.-G. Park, *Solar Energy Materials and Solar Cells*, 91, 1749-1754 (2007).

3. "Nano-embossed hollow spherical TiO<sub>2</sub> as bi-functional material for high efficiency dye-sensitized solar cells", **H.-J. Koo**, Y. J. Kim, Y. H. Lee, W.-I. Lee K. Kim, N.-G. Park, *Advanced Materials*, 20, 195-199 (2008).
4. "Fabrication of heterosensitizer-junction dye-sensitized solar cells", **H.-J. Koo**, K. Kim, N.-G. Park, S. Hwang, C. Park, *Applied Physics Letters*, 92, 142103 (2008)

## FELLOWSHIPS AND ASSISTANTSHIPS

Academic Scholarships of Seoul National University	(1997/2, 2002/2, 2003/1-2 (yr/term))
Teaching Assistantships of Seoul National University	(2004/1, 2005/2 (yr/term))

## CONFERENCES

1. **H.-J. Koo** and K. Char, "Improvement in Matrix Property of Low-k Film through Control of the Structure of PMSSQ", Polymer Society of Korea, Hotel GS Plaza, Daegu, Korea, October 08-09, 2004.
2. **H.-J. Koo** and K. Char, "Effect of UV Precure on Physical Properties of Organosilicate Thin Films Containing UV Responsive Pendant Group", Polymer Society of Korea, The Federation of Korean Industries Hall, Korea, April 14-15, 2005.
3. **H.-J. Koo** and K. Char, "Effect of UV Precure on the Organosilicate Thin Films Containing UV Responsive Pendant Group", Korean Institute of Chemical Engineers, Yosu National University, Korea, April 22-23, 2005.
4. **H.-J. Koo** and K. Char, "The Effects of UV Treatment on Photosensitive Organosilicate Films Containing UV Responsive Pendant Group", Polymer Society of Korea, Jeju, Korea, October 13-14, 2005.
5. **H.-J. Koo**, H. Seo, Y. Park and K. Char, "Effect of UV Treatment on Silsesquioxane-Based Films", Polymer Society of Korea, Ilsan kintex, Korea, April 6-7, 2006.
6. **H.-J. Koo**, J. Park, B. Yoo, K. Yoo, K. Kim and N.-G. Park, "Size-dependent Scattering Efficiency in Dye Sensitized Solar Cells", Polymer Society of Korea, Jeju, Korea, 2006.
7. S. T. Chang, O. J. Cayre, **H.-J. Koo**, O. D. Velev, "Polyelectrolyte Diodes and Transistors Based on Aqueous Ionic Gel Junctions", 82<sup>nd</sup> ACS Colloid & Surface Science Symposium, Raleigh, USA, 2008.
8. **H.-J. Koo**, S. T. Chang, O. J. Cayre, O. D. Velev, "Soft Matter Gel and SiO<sub>2</sub> Thin Film Diode", Triangle Soft Matter Workshop, Raleigh, USA, 2009.