Sungwook Woo

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Education & Training

Wyss Institute for Biologically Inspired Engineering at **Harvard University**
Postdoctoral Fellow (2014 - present)
Advisor: Peng Yin

California Institute of Technology (Caltech)
Ph.D. in Bioengineering (May 2013)
Thesis Title: "Beyond Watson and Crick: programming the self-assembly and reconfiguration of DNA nanostructures based on stacking interactions"
Advisor: Paul W. K. Rothemund

Pohang University of Science and Technology (Postech)
M.S. in Chemistry (Feb. 2007)
Thesis Title: "Interactions between dendrons and carbon nanotube surfaces"
Advisor: Joon Won Park

Pohang University of Science and Technology (Postech) &
University of Maryland, College Park (UMD, Exchange Student Program**)**
B.S. in Materials Science and Engineering (Feb. 2005)
Magna Cum Laude

Publications & Presentations

Publications:

· **S. Woo***, P. W. K. Rothemund*, Programmable molecular recognition based on the geometry of DNA nanostructures, *Nature Chemistry*, **3**, 620-627 (2011), doi: 10.1038/nchem.1070. *Co-corresponding authors

See also:
Nature Chemistry News & Views by Andrew J. Turberfield (doi:10.1038/nchem.1097),
Nature Methods Research Highlights (doi:10.1038/nmeth.1687).

· **S. Woo**, Y. Lee, V. Sunkara, R. K. Cheedarala, H. S. Shin, H. C. Choi, and J. W. Park, "Fingertip"-guided noncovalent functionalization of carbon nanotubes by dendrons, *Langmuir*, **23**, 11373-11376 (2007), doi: 10.1021/la701968y.

Patent:

· J. W. Park, H. C. Choi, and **S. Woo**, Carbon nanotube-dendron composite and biosensor comprising the same, Pub. No. WO/2008/044896 (2008).

Presentations:

· **S. Woo**, P. W. K. Rothemund, "Two-Dimensional Crystallization of DNA Nanostructures via Cation-Controlled Surface Diffusion Assembly", Oral presentation, UKC (US-Korea Conference) 2013, East Rutherford, NJ (Aug. 2013)
· **S. Woo** , "Using DNA Origami to Study Chemistry and Biology", Oral presentation, Molecular Systems Lab, Wyss Institute for Biologically Inspired Engineering, Harvard University (Jan. 2013)

- **S. Woo**, P. W. K. Rothemund, "Studying the ParMRC plasmid partitioning system using DNA origami", Poster presentation, 9th Annual FNANO (Foundations of Nanosciences) Conference, Snowbird, UT (Apr. 2012)
- **S. Woo**, P. W. K. Rothemund, "What can we do beyond Watson and Crick? Stacking bonds: programming molecular recognition using DNA origami", Poster presentation, 8th Annual FNANO (Foundations of Nanosciences) Conference, Snowbird, UT (Apr. 2011)
- **S. Woo**, P. W. K. Rothemund, "Programmable Self-Assembly of DNA Origami across Length Scales", Poster presentation, Materials Research Society meeting, San Francisco, CA (Apr. 2010)
- **S. Woo**, P. W. K. Rothemund, "Creating Programmable Stacking Bonds using DNA Origami", Oral presentation, 2nd Annual Workshop for Molecular Programming Project, Oxnard, CA (Jan. 2010)
- **S. Woo**, P. W. K. Rothemund, "Self-Assembly of DNA Origami to Create Larger Nanostructures", Poster presentation, Gordon Research Conferences on "Soft Condensed Matter Physics", New London, NH (Aug. 2009)
- **S. Woo**, P. W. K. Rothemund, "Self-Assembly of DNA Origami to Create Larger Nanostructures", Poster presentation, FENA (Functional Engineered Nano Archtectonics) 5th Annual Review, Los Angeles, CA (Jan. 2009) **– *Best Poster Award***
- **S. Woo**, H. C. Choi, and J. W. Park, "Noncovalent Functionalization of Carbon Nanotubes by Dendrons", Poster presentation, 99th National Meeting of the Korean Chemical Society, Seoul, Korea (Apr. 2007)

Awards & Honors

- **KUSCO-KSEA Scholarship** for outstanding graduate students, KUSCO (Korea-US Science Cooperation Center) & KSEA (Korean-American Scientists and Engineers Association) (2013)
- **Rosen Scholarship** for an exceptional graduate student (inaugural recipient), Rosen Center for Biological Engineering, Caltech (2009-2010)
- **Best Poster Presentation Award** at FENA (Functional Engineered Nano Architectonics) 5th Annual Review, SRC (Semiconductor Research Corporation) (Jan. 2009)
- **Special Institute Fellowship**, Caltech (2007-2008)
- **Best Teaching Assistant Award**, Department of Chemistry, Postech (2006)
- **BK21** (Brain Korea 21) **Fellowship** (Sep. 2005 – Feb. 2007)
- **NURI** (New University for Regional Innovation) **Fellowship** (Spring 2005)
- **Honor Scholarship** for superior academic achievement, Postech (Fall 2004)
- **Exchange Student Scholarship**, Postech & UMD (2000)
- **Honor Prize** for academic excellence, Postech (Spring 1999, Fall 1999, Spring 2004, Fall 2004)

Teaching Experience

Instructor - Biology Tutorial: DNA Nanotechnology for Biologists, **Caltech** (Winter, 2011-2012)

- Designed the course, gave lectures, led discussion sessions, and graded course assignments and final grades.

Teaching Assistant - General Chemistry Honors, **Postech** (Fall 2005)

· Managed weekly discussion sessions, composed quizzes, and graded course assignments, quizzes and exams. (Textbook: *Principles of Modern Chemistry*, David W. Oxtoby & H. Pat Gillis)

· Won the ***Best TA Award.***

Teaching Assistant - General Chemistry, **Postech** (Spring 2005)

· Managed weekly discussion sessions, composed in-class quizzes & part of exams, and graded course assignments, quizzes and exams. (Textbook: *Chemistry: A General Chemistry Project of the American Chemical Society*, American Chemical Society & Jerry A. Bell)

Work Experience

Interhouse Corporation, Seoul, Korea
in lieu of mandatory military service
Team Manager (Aug. 2003 - Dec. 2003)
Software Programmer (Feb. 2001 - Jul. 2003)

· Developed a company intranet system (document management & approval system), a web site local search engine, an online lottery selling system, etc, using Java, C, php and perl.

Professional Service & Activities

· **Reviewer** for *Journal of the American Chemical Society*
· **Organizing committee**, Bioengineering Lecture Series, Caltech (2010 - 2012)
· **Symposium Assistant**, Materials Research Society meeting (Apr. 2010)
· **TED translator**, TED.com (Sep. 2009 – present)
· **Laboratory Safety Officer** , DNA group, Caltech (Jun. 2009 – Dec. 2013)
· **Instrument Manager** for Atomic Force Microscopes, DNA group, Caltech (Nov. 2008 – Dec. 2013)
· **Co-Chair**, Biomedical Engineering session, 18th Annual South-Western Regional Technology Conference, Korean-American Scientists and Engineers Association (Feb. 2008)
· **Member**, Korean Chemical Society
· **Member**, Korea Nano Technology Research Society
· **Participant**, 12th International Meeting on DNA Computing, Seoul, Korea (Jun. 2006)
· **Participant**, Postech-Nottingham Symposium on Bionanoscience, Postech (Feb. 2005)
· **Participant**, 4th Postech-Tohoku Academic Symposium on Materials Science (Sep. 2004)