

## ***Beom-Jin Yoon***

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### **CONTACT ADDRESS**

School of Polymer, Textile, and Fiber Engineering  
Georgia Institute of Technology  
801 Ferst Dr. NW  
MRDC-1, PTFE  
Atlanta, GA 30332-0295

E-mail: beomjin.yoon@gatech.edu

### **POSITION**

09/2005 – present                    **Georgia Institute of Technology**, Atlanta, GA, USA  
Graduate student  
Graduate Research Assistant

### **Professional Experience**

10/2003 – 07/2005                    **Pohang University of Science & Technology (POSTECH)**, Pohang, Korea  
Researcher  
Leader of Microwave Team

### **EDUCATION**

02/2003                                    **Pohang University of Science & Technology (POSTECH)**, Pohang, Korea  
M.S. in Chemical Engineering, Electronic Material Processing program  
with Magna Cum Laude  
(GPA 3.77/4.3)

Advisor: Professor Kun-Hong Lee

Title of thesis: *Fabrication of Integrated Carbon Nanotube Electrodes  
by Direct Growth of CNTs on Bulk Metal Substrates*

02/2001                                    **Hanyang University**, Seoul, Korea  
B.S. in Chemical Engineering and Industrial Chemistry  
with Summa Cum Laude  
(GPA: 3.97/4.5)

Advisor: Professor Seong Geun Oh

Title of thesis: *Influence of Non-ionic Surfactant structure*

*in the Preparation of Silver Nano Particles*

### **AWARD & HONORS**

09/2005 – Current

**Georgia Institute of Technology, Atlanta, USA**

Research Assistantships

03/2001 – 02/2003

**Pohang University of Science & Technology (POSTECH), Pohang, Korea**

Research Assistantships

03/2001 – 06/2001

**Pohang University of Science & Technology (POSTECH), Pohang, Korea**

Teaching assistantships

09/1997 – 02/2001

**Hanyang University, Seoul, Korea**

Top Scholarships - fall '97, spring '98, fall '98, spring '99, fall '99, spring '00,  
fall '00

### **JOURNAL PUBLICATIONS**

1. Yoon, D.M.; **Yoon, B.-J.**; Lee, K.-H.; Kim, H.S.; Park, C.G., "Synthesis of carbon nanotubes from solid carbon sources by direct microwave irradiation", *Carbon*, Vol. 44, P. 1339 ~ 1343 (2006)
2. Jee, S.E.; Lee, P.S.; **Yoon, B.-J.**; Jeong, S.-H.; Lee, K.-H., "Fabrication of microstructures by wet etching of anodic aluminum oxide substrates", *Chemistry of Materials*, Vol. 17, P. 4049 ~ 4052 (2005).
3. **Yoon, B.-J.**; Hong, E.H.; Jee, S.E.; Yoon D.-M.; Shim, D.-S.; Son, G.-Y.; Lee, Y.J.; Lee, K.-H.; Kim, H.S.; Park, C.G., "Fabrication of flexible carbon nanotube field emitter arrays by direct microwave irradiation on organic polymer substrate", *Journal of the American Chemical Society*, Vol. 127, P.8234 ~ 8235 (2005).
4. **Yoon, B.-J.**; Jeong, S.-H.; Lee, K.-H.; Kim, H.S.; Park, C.G.; Han, J.H., "Electrical properties of electrical double layer capacitors with integrated carbon nanotube electrodes", *Chemical Physics Letters*, Vol. 388, P.170 ~ 174 (2004).

5. **Yoon, B.-J.**; Lee, K.-H., "Fabrication of electrode for EDLC (electric double layer capacitor) using carbon nanotubes", *Theories and Applications of Chemical Engineering*, Vol. 8, P. 5422 ~ 5423 (2002).

## **Patents**

1. Preparation of nanowires by means of electromagneticwave irradiation without using catalysts and nanowiresprepared by the same, **Korea Patent, Registration No. 10-0772661-0000**
2. Method for manufacturing carbon nanotubes from solid carbon sources and carbon nanotubes manufactured thereby, **Korea Patent, Registration No. 10-0696361-0000**
3. Method for manufacturing nanowires and substrate onwhich nanowires are grown, **Korea Patent , Application No. 10-2005-0098533**

## **PROCEEDINGS and PRESENTATIONS**

1. **Yoon, B.-J.**; Hong, E.H.; Jee, S.E.; Yoon D.-M.; Shim, D.-S.; Son, G.-Y.; Lee, Y.J.; Lee, K.-H.; Kim, H.S.; Park, C.G., "Fabrication of flexible carbon nanotube field emitter arrays by direct microwave irradiation on organic polymer substrate", *Proceedings of US-Korea conference, Nanostructure science and technology symposium 2*, P. 1 ~ 4, KSEA/Irvine, U.S.A. (2005)
2. Yoon, D.-M; **Yoon, B.-J.**; Shim, D.-S.; Jung, S.-H.; Lee, K.-H., "Synthesis of carbon nanotubes from solid sources by direct microwave irradiation", *6th Cross Straits Symposium on Materials, Energy and Environmental Engineering*, P.101 ~ 102, Pohang, Korea (2004).
3. Shim, D.-S.; Hong, E.H.; **Yoon, B.-J.**; Yoon, D.-M; Lee, K.-H.; Oh, S.O.; Park, C.G., "Synthesis of carbon nanotubes on polymer surface by microwave irradiation", *6th Cross Straits Symposium on Materials, Energy and Environmental Engineering*, P.103 ~ 104, Pohang, Korea (2004).
4. Lee, K.-H.; Hong, E.H.; **Yoon, B.-J.**; Shim, D.-S., "Direct synthesis of carbon nanotubes on organic polymer substrate", Session no. 582g, Annual meeting of AIChE, AIChE/Austin, U.S.A. (2004)
5. Jee, S.E.; Lee, P.S.; **Yoon, B.-J.**; Jeong, S.-H.; Lee, K.-H., "Fabrication of microstructures with

high aspect ratios using anodic aluminum oxide substrates", *Japan-Korea Symposium on Materials and Interfaces*, Session A-8, P. 20, Beppu, Japan (2004)

6. Hong, E.H.; **Yoon, B.-J.**; Shim, D.-S.; Lee, K.-H., "Direct synthesis of carbon nanotubes on organic polymer substrates", *Proceedings of the International Symposium on Microwave Science and its Application to Related Fields (Microwave 2004)*, P.111 ~ 113, Takamatsu, Japan (2004)
7. **Yoon, B.-J.**; Hong, E.H.; Lee, K.-H., "In situ synthesis of carbon nanotubes on polymeric substrates", *Proceedings of the (POSTECH – UW Madison) International Joint Workshop on Nanotechnology*, P. 283 ~ 296, Pohang, Korea (2004)
8. **Yoon, B.-J.**; Lee, K.-H., "Direct growth of carbon nanotubes on metal substrates", *Proceedings of the (POSTECH – UW Madison) International Joint Workshop on Nanotechnology*, P. 277 ~ 282, Pohang, Korea (2004)
9. Hong, E.H.; **Yoon, B.-J.**; Lee, K.-H., "In situ synthesis of carbon nanotubes on organic polymer substrates", *3rd US-Korea workshop on nanostructured materials and nanomanufacturing*, P. 17 ~ 18, Seoul, Korea (2004).
10. **Yoon, B.-J.**; Lee, K.-H., "Fabrication of electrode for EDLC (electric double layer capacitor) using carbon nanotubes", Annual (Fall) meeting of *KIChE*, P. 5422 ~ P. 5423, *Dae-Jeon, Korea (2002)*

## **PROJECTS**

1. Development of plane light source for the backlight unit (BLU) (09/2004 – 07/2005)
  - Samsung Electronics
2. Low temperature synthesis of carbon nanotubes by direct microwave irradiation (09/2003 – 07/2005)
  - Asian Office of Aerospace Research and Development (AOARD, which is the detachment of Air Force Research Laboratory (AFRL, U.S.))

3. Development of unit cell for high performance water purification using CDI cell (2) (09/2002 – 08/2003)
  - POSCO
4. Synthesis and estimation of carbon nano materials for electrodes (12/2001 – 11/2002)
  - LG Chem.
5. Development of gas phase synthetic method for multiwalled carbon nanotubes (06/2001 – 05/2002)
  - Iljin Nanotech

### **RESEARCH EXPERIENCE**

10/2003 – 07/2005

**Pohang University of Science & Technology (POSTECH), Pohang, Korea**

**Adviser: Professor Kun-Hong Lee**

#### **Carbon nanotube & Flexible field emission display**

1. Low temperature synthesis of carbon nanotubes by direct microwave irradiation
2. Synthesis of carbon nanotubes on polymeric substrates
3. Microwave local heating
4. Design and fabrication of carbon nanotube for the flexible field emission display
5. Design and fabrication of catalyst for the control of CNT structure

#### **Anodic Aluminum Oxide (AAO) Nano-template**

1. Fabrication of nanostructure using AAO
2. Graded materials

03/2001 – 02/2003

**Pohang University of Science & Technology (POSTECH), Pohang, Korea**

**Adviser: Professor Kun-Hong Lee**

#### **Carbon nanotube & Electric double layer capacitor**

1. Synthesis of carbon nanotubes by plasma enhanced chemical vapor deposition (PECVD) and thermal CVD
2. Surface treatment of carbon nanotubes using plasma
3. Exposure of effective edge of carbon nanostructure
4. Design and fabrication of integrated carbon nanotube electrode for electric double layer capacitor

5. Mass production of carbon nanotubes using gas phase synthesis and flame synthesis methods

03/2000 – 01/2001

**Hanyang University**, Seoul, Korea

**Adviser: Professor Seong Geun Oh**

**Nanoparticles and Self-assembling molecules**

1. Synthesis of silver nanoparticles using nano-reactor fabricated by self-assembling molecules
2. Reducing agent free process for the preparation of colloidal nanoparticles
3. Emulsion and emulsion stabilities

***TECHNICAL SKILLS***

1. Transmission Electron Microscopy (TEM, JEOL-1200EX)
2. Scanning Electron Microscopy (SEM, Phillips XL30S FEG, LEO-1530)
3. RF/DC Magnetron Sputter
4. Thermal and E-beam Evaporator
5. Brunauer-Emmett-Teller System (BET, ASAP 2010, Micromeritics)
6. Plasma Enhanced Chemical Vapor Deposition System (PECVD)
7. Field Emission Measurement System
8. Cahn Balance (Cahn)
9. Thermogravimetry Analysis
10. Differential Scanning Calorimeter (TA, DSC-2910)
11. Gas Chromatography (Young-in 2100)
12. Thermal Furnace
13. Potentiostat / Galvanostat (EG&G Princeton Applied Research, 273A).
14. Infra-Red Image Furnace
15. Ellipsometry (J.A. Woollam Co., Inc)
16. Microwave Chemical Reaction System

***TEACHING EXPERIENCE***

03/2001 – 06/2001

**Pohang University of Science & Technology (POSTECH)**, Pohang, Korea

Teaching Assistant – Reaction Engineering

03/1998 – 12/1999

**Dae-il Academy**, Seoul, Korea

Lecturer – Chemistry and Physics

**OTHER ACTIVITIES**

03/1997 – 02/2001                      Members and crew chief of 38<sup>th</sup> crew, Schnee Wein (Established in 1960,  
Student Club in Chemical Engineering, Hanyang University, Seoul)

**REFERENCES**

**Professor Mohan Srinivasarao**

School of Polymer, Textile, and Fiber Engineering

Georgia Institute of Technology

801 Ferst Drive, NW, MRDC 1

Atlanta, GA 30332

E-mail: mohan@ptfe.gatech.edu

Tel.: +1-404-894-9348

Fax.: +1-404-894-8780

**Professor Kun-Hong Lee**

Department of Chemical Engineering

Pohang University of Science and Technology (POSTECH), Pohang, Korea

E-mail: ce20047@postech.ac.kr

Tel.: +82-54-279-2271

Fax.: +82-54-279-8298

**Professor Seong Geun Oh**

Department of Chemical Engineering

Hanyang University, Seoul, Korea

E-mail: seongoh@hanyang.ac.kr

Tel.: +82-2-2290-0485

**Professor Soo-Hwan Jeong**

Department of Chemical Engineering

Kyungbuk National University, Daegu, Korea

E-mail: soohwan.jeong@knu.ac.kr

Tel.: +82-53-950-5615

**Professor In-Sik Nam**

Pohang University of Science and Technology (POSTECH), Pohang, Korea

E-mail: isnam@postech.ac.kr

Tel.: +82-54-279-2264

**Professor Young Chan Bae**

Department of Chemical Engineering

Hanyang University, Seoul, Korea

E-mail: ycbae@hanyang.ac.kr

Tel.: +82-2-2290-0529

**Professor Byoung Chul Kim**

Division of Chemical Engineering

Hanyang University, Seoul, Korea

E-mail: bckim@hanyang.ac.kr

Tel.: +82-2-2290-0494

**Professor Young Chai Kim**

Department of Chemical Engineering

Hanyang University, Seoul, Korea

E-mail: yckimy@hanyang.ac.kr

Tel.: +82-2-2290-0486

**Professor Kijung Yong**

Department of Chemical Engineering

Pohang University of Science and Technology (POSTECH), Pohang, Korea

E-mail: kyong@postech.ac.kr

Tel.: +82-54-279-2278

Fax.: +82-54-279-8298