

## Curriculum Vitae

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**Date of Birth:** January 28, 1987

**Title:** Associate Professor

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### Education and Career:

**2005.3 ~ 2009.2** Department of Chemistry & Nano Science, Ewha Womans University, Korea (B.S.)

**2009.3 ~ 2011.2** Department of Chemistry & Nano Science, Ewha Womans University, Korea (M.S.)  
(Advisor: Prof. Chongmok Lee)

**2011.3 ~ 2012.3** Department of Chemistry & Nano Science, Ewha Womans University, Korea (Research Scientist)  
(Advisor: Prof. Sang-gi Lee)

**2012.4 ~ 2015.3** Department of Chemistry & Biotechnology, School of Engineering, The University of Tokyo, Japan (Ph.D.)  
(Advisor: Prof. Takuzo Aida)

### Experience:

**2015.4 ~ 2017.10** Postdoctoral Researcher (PI: Prof. Ryo Yoshida )  
Department of Materials Engineering, School of Engineering, The University of Tokyo, Japan

**2017.11. ~ 2023.8** Assistant Professor  
Department of Materials Science and Engineering, POSTECH, Pohang, South Korea

**2023.9. ~ present** Associate Professor  
Department of Materials Science and Engineering, POSTECH, Pohang, South Korea

### Fellowship:

**2013.4 ~ 2015.3** JSPS Research Fellowship (DC2)

**2015.4 ~ 2017.3** JSPS Postdoctoral Fellowship

### **Awards and Honors:**

- 2014 Student Presentation Award, 94th Chemical Society of Japan Annual Meeting
- 2014 Best Poster Award, NIMS Conference 2014
- 2015 Excellent Poster Presentation Award, MANA International Symposium
- 2015 Outstanding Student Award for Poster Presentation, International Symposium on Smart Biomaterials 3rd Hoffman Family Symposium
- 2015 Dean's Award for PhD, The University of Tokyo
- 2016 CEMS Rising Star Award, CEMS International Symposium on Supramolecular Chemistry & Functional Materials 2016
- 2020 비대면 강좌운영 우수사례 최우수상
- 2023 포항공과대학교 일범석좌교수 임명
- 2023 한국 도레이 펠로십 선정
- 2023 한국고분자학회 신진학술상 수상
- 2023 대한화학회 고분자화학분과 TCI 신진 학술상 수상

### **Patents:**

1. 이온성 고분자 바인더를 포함하는 음극, 이의 제조방법 및 이를 포함하는 리튬 이차 전지  
(국내 특허, 출원번호: 10-2023-0039610, 등록일자: 2023.03.27)
2. 양쪽성 이온 이미다졸륨 고분자와 마이크로파 합성법을 이용한 전도성 그래핀 하이드로젤  
(국내 특허, 출원번호: 10-2021-0157990, 등록일자: 2021.11.16)

### **Technology transfer:**

시한성 소자의 분해시간 제어 구조체 외 3 건 (양쪽성 이온 이미다졸륨 고분자와 마이크로파 합성법을 이용한 전도성 그래핀 하이드로젤 )  
(발명자: 김연수/차형준/황동수, 기술이전기관: (주)에이엔폴리, 이전시기: 2021/11/30)

### **Book**

金 娟秀, 秋元 文, 吉田 亮:  
"自励振動ゲルアクチュエータ", ソフトアクチュエータの材料・構成・応用技術 (監修: 安積 欣志, 奥崎秀典, 鈴森康一) S&T 出版, pp.52-60, (2016)

저자 : 김 연수, 아키토 아야, 요시다 료  
제목: "자립진동 젤 액추에이터"  
책명 : 소프트액추에이터의 재료/구성/응용기술, S&T 출판, pp. 52-60, (2016).  
(일본어로 기술)

## Publications:

(\*: Corresponding author)

1. Sangyeop Lee,† [Im Kyung Han](#),† [Na Gyeong Jeon](#), Yubin Lee, Hye Bin Son, Dong-Yeob Han, Seoha Nam, [Taehun Chung](#), Myung-Jun Kwak, [Youn Soo Kim](#),\* and Soojin Park\*, “Promoting Homogeneous Zinc-ion Transfer through Preferential Ion Coordination Effect in Gel Electrolyte for Stable Zinc Metal Batteries”, *Advanced Science*, **2023**, 2304915
1. Dong-Yeob Han,† [Im Kyung Han](#),† Hye Bin Son, [Youn Soo Kim](#),\* Jaegwon Ryu,\* and Soojin Park\*, “Layering Charged Polymers Enables Highly Integrated High-Capacity Battery Anodes”, *Advanced Functional Materials*, **2023**, 2213458. *Highlighted as a front cover*
2. [Jihoon Han](#),† Jemin Lee,† Seonghyeon Kim, Anna Lee, Hyung Gyu Park\* and [Youn Soo Kim](#)\*, “Mucus-inspired organogel as an efficient absorbent and retention agent for volatile organic compounds”, *Nanoscale*, **2023**, 15, 101-108.
3. You-Jin Kim, Jeong-Bin Moon, Hyerim Hwang, [Youn Soo Kim](#), Gi-Ra Yi\*, “Advances in Colloidal Building Blocks: Toward Patchy Colloidal Clusters”, *Advanced Materials*, **2022**, 2203045.
4. [Im Kyung Han](#),† [Kang-Il Song](#),† [Sang-Mun Jung](#), Yeonggwon Jo, Jaesub Kwon, [Taehun Chung](#), Surim Yoo, Jinah Jang, Yong-Tae Kim, Dong Soo Hwang, [Youn Soo Kim](#)\* “Electroconductive, Adhesive, Non-swelling, and Viscoelastic Hydrogels for Bioelectronics”, *Advanced Materials*, **2022**, 03431. *Highlighted as a back cover*
5. [Taehun Chung](#), [Jihoon Han](#), Young Jae Kim, Kyeong-Jun Jeong, Jun Mo Koo, Jemin Lee, Hyung Gyu Park, Taiha Joo, [Youn Soo Kim](#)\* “Effect of Anions on the Phase Transition Temperature of Two Structurally Isomeric Polymers: Poly(*N*-isopropylacrylamide) and Poly(2-isopropyl-2-oxazoline)”, *Polymer Chemistry*, **2022**, 13, 4615-4624. *Highlighted as a front cover*
6. Wonjeong Suh, Chaeyong Park, Joosung Oh, Sungmin Moon, Seungmoon Choi, [Youn Soo Kim](#)\*, Unyong Jeong\* “Small-Sized Deformable Shear Sensor Array for Direct Monitoring of Quantitative Shear Distribution”, *Adv.Mater. Technol.*, **2021**, 2101071
7. [Im Kyung Han](#), [Jihoon Han](#), [Youn Soo Kim](#)\* “Liquid-to-Solid Phase Transitions of Imidazolium-Based Zwitterionic Polymers Induced by Hofmeister Anions”, *Chem. Asian J.*, **2021**, 16, 1897–1900.
8. [Sang-Mun Jung](#)†, [Jaesub Kwon](#)†, Jinhyeon Lee, [Im Kyung Han](#), Kyu-Su Kim, [Youn Soo Kim](#), and [Yong-Tae Kim](#)\* “Cost-Efficient Nickel-based Thermo-Electrochemical Cells for Utilizing Low-Grade Thermal Energy”, *Journal of power sources*, **2021**, 494, 229705.
9. [Taehun Chung](#)†, [Im Kyung Han](#)†, [Jihoon Han](#), Kyojin Ahn, [Youn Soo Kim](#)\* “Fast and large shrinking of thermoresponsive hydrogels with phase-separated structures”, *Gels*, **2021**, 7(1), 18.

10. Im Kyung Han, Taehun Chung, Jihoon Han, [Youn Soo Kim](#)\* “Nanocomposite hydrogel actuators hybridized with various dimensional nanomaterials for stimuli responsiveness enhancement.”, *Nano Convergence*, **2019**, 6, 18
11. Eunjong Lee, [Youn Soo Kim](#)\*, Aya Mizutani Akimoto, and Ryo Yoshida\* “Reversible and directional control of chemical wave propagation in a hydrogel by magnetic migration through liquid interfaces”, *Chem. Mater.*, **2018**, 30 (17), pp 5841–5845.
12. Zhifang Sun, Yoshihiro Yamauchi, Fumito Araoka, [Youn Soo Kim](#), Julian Bergueiro, Yasuhiro Ishida,\* Yasuo Ebina, Takayoshi Sasaki, Takaaki Hikima, and Takuzo Aida\* “An Anisotropic Hydrogel Actuator Enabling Earthworm-Like Directed Peristaltic Crawling”, *Angewandte Chemie*, **2018**, 57, 15772-15776.
13. Ko Matsukawa, Tsukuru Masuda, [Youn Soo Kim](#), Aya Akimoto\* and Ryo Yoshida\* “Thermoresponsive surface-grafted gels: Controlling the “bulk” volume change properties by “surface” localized polymer grafting with various densities” *Langmuir*, **2017**, 33, 13828.
14. [Youn Soo Kim](#), Ryota Tamate, Aya Mizutani Akimoto, and Ryo Yoshida\* "Recent developments in self-oscillating polymeric systems as smart materials: from polymers to bulk hydrogels" *Mater. Horiz.* **2017**, 4, 38.
15. Koki Sano, [Youn Soo Kim](#), Yasuhiro Ishida\*, Yasuo Ebina, Takayoshi Sasaki, Takaaki Hikima, and Takuzo Aida\* “Photonic Water Dynamically Responsive to External Stimuli” *Nature Commun.* **2016**, 7, 12559.
16. [Youn Soo Kim](#), Mingjie Liu, Yasuhiro Ishida\*, Yasuo Ebina, Takayoshi Sasaki, Takaaki Hikima, Masaki Takata and Takuzo Aida\* “Thermoresponsive Actuation Enabled by Permittivity Switching in an Electrostatically Anisotropic Hydrogel” *Nature Mater.* **2015**, 14, 1002.
17. [Youn Soo Kim](#), Areum Cha, Ju Yeon Shin, Hyun Ji Jeon, Jun Ho Shim, Chongmok Lee, and Sang-gi Lee\* “High-density assembly of gold nanoparticles with zwitterionic carbon nanotubes and their electrocatalytic activity in oxygen reduction reaction” *Chem. Commun.* **2012**, 48, 8940.
18. [Youn Soo Kim](#), Ju Yeon Shin, Hyun Ji Jeon, Areum Cha, Chongmok Lee and Sang-gi Lee\* “Insight into the origin of the positive effects of imidazolium salt on electrocatalytic activity: ionic carbon nanotubes as metal-free electrocatalysts for oxygen reduction reaction” *Chem. Asian. J.* **2013**, 8, 232. [Highlighted in Chemistry Views](#).
19. Jun Ho Shim, [Youn Soo Kim](#), Minkyung Kang, Chongmok Lee and Youngmi Lee\* “Electrocatalytic activity of nanoporous Pd and Pt: effect of structural features” *Phys. Chem. Chem. Phys.* **2012**, 14, 3974.

20. [Youn Soo Kim](#), Ju Yeon Shin, Hyun Ji Jeon, Areum Cha, Chongmok Lee and Sang-gi Lee\* “Anion-dependent electrocatalytic activity of supported palladium catalysts onto imidazolium salt-functionalized carbon nanotubes in oxygen reduction reaction” *Bull. Korean Chem. Soc.* **2011**, 32, 3209.
21. Ju Yeon Shin, [Youn Soo Kim \(co-first author\)](#), Youngmi Lee, Jun Ho Shim, Chongmok Lee and Sang-gi Lee\* “Impact of anions on electrocatalytic activity in palladium nanoparticles supported on ionic liquid–carbon nanotube hybrids for the oxygen reduction reaction” *Chem. Asian J.* **2011**, 6, 2016. [Highlighted as a front cover.](#)
22. Ying Zhou, Ji Whan Kim, Raju Nandhakumar, Min Jung Kim, Eunae Cho, [Youn Soo Kim](#), Yoon Hee Jang, Chongmok Lee, Seungwu Han, Kwan Mook Kim, Jang-Joo Kim and Juyoung Yoon\* “Novel binaphthyl-containing bi-nuclear boron complex with low concentration quenching effect for efficient organic light-emitting diodes” *Chem. Commun.*, **2010**, 46, 6512.

### Research Interests

The self-assembly of block copolymers and the synthesis of functional hydrogels to develop biomimetic soft materials, actuators, bioelectronics, and bio-adhesives.