

Hong Yeon Yoon

- Post doctoral researcher
 - Mechanical Engineering
 - Korea Advanced Institute of Science and Technology (KAIST)
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 - Research interest:
 1. Nanoscale interfacial phenomena
 2. Surface characterization and engineering
 3. Phase-change heat transfer
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Academic Experiences

Department of Mechanical engineering, Korea Advanced Institute of Science and Technology (KAIST) Post doctoral researcher (2026.08 – present)

Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST) Integrated M.S. - Ph.D. (2020.08 – 2026.08)

Department of Chemistry, Korea Advanced Institute of Science and Technology (KAIST) B.S. (2020.02 – 2024.02)

Journal Publications:

1. **Hong Yeon Yoon**⁺, Hyunjoon Yoo⁺, Manmatha Mahato, Jong Hun Kim, Sokhna Dieng, Chi Won Ahn, Yury Gogotsi^{*}, Il-Kwon Oh^{*}, and Jeong Young Park^{*} “Influence of X-elements on Tribological Properties and Surface Chemistry of MXene Atomic Layers”, Nano Lett. 25, 24, 9817–9824 (2025)

2. Jong Hun Kim[†], Hunyoung Cho[†], **HongYeon Yoon**, Dooho Lee, Joong Il Jake Choi, Jong Hoon Jung, Sang Hoon Kim^{*}, and Jeong Young Park^{*} “Water–solid interactions on NaCl: Tracking adsorption to deliquescence with in situ scanning probe microscopy under a wide range of water vapor pressure”, J. Chem. Phys. 163, 174706 (2025).

3. Jong Hun Kim, Hyun Soo Ahn, **Hong Yeon Yoon**, Hunyoung Cho, Jeong Young Park^{*}, and Jong Hoon Jung^{*}, “Crystal Orientation Effects on the Nanotribological, Mechanical and Electrical Properties of Atomically Flat SrTiO₃ Surfaces”, ACS Applied Electronic Materials, 18, 8466–8475(2025)

4. Araz Rajabi-Abhari, Hyunjoon Yoo, Ji-Seok Kim, **Hong Yeon Yoon**, Jeong Young Park, Ning Yan, Rassoul Tabassian, Il-Kwon Oh^{*} “Reversibly Compressible Silanated Cellulose Nanofibril Aerogel for Triboelectric Taekwondo Scoring Sensors”, Small, 20,50,2405664 (2024)

5. Jong Hun Kim, Da Woon Jin, Jae Hyeon Jeon, Dheeraj Kumar, **Hong Yeon Yoon**, Hunyoung Cho, Hyotcherl Ihee, Jeong Young Park^{*} and Jong Hoon Jung^{*}, “Tailoring Morphological and Chemical Contributions of Nanoscale Charge Transfer for Enhanced Triboelectric Nanogenerators”, Nanoscale, 31, 16 (2024)

6. Bernd Wicklein, Geetha Valurouthu, **Hong Yeon Yoon**, Hyunjoon Yoo, Sathiyathan Ponnar, Manmatha Mahato, Jiseok Kim, Syed Sheraz Ali, Jeong Young Park, Yury Gogotsi, Il-Kwon Oh* "Influence of MXene Composition on Triboelectricity of MXene-Alginate Nanocomposites", ACS Applied Materials & Interfaces, 16, 23948-23959 (2024)

7. Rassoul Tabassiana, Araz Rajabi-Abhari, Manmatha Mahato, Hyunjoon Yoo, **Hong Yeon Yoon**, Jeong Young Park, and Il-Kwon Oh* "Metal Organic Framework Nanofibrous Film for Two Different Modes of Triboelectric Nanogenerators", Smartmat, 5,5, e1270 (2024)

8. Jong Hun Kim⁺, Jinhyeok Jeong⁺, Dae Sol Kong, **Hong Yeon Yoon**, Hunyoung Cho, Jong Hoon Jung* and Jeong Young Park*, "Direct Observation of Contact Electrification Effects at Nanoscale Using Scanning Probe Microscopy", Advanced Materials Interfaces 2300821 (2023)

Conference Presentations:

1. **Hong Yeon Yoon**, and Jeong Young Park*, "Nanoscale Friction of Novel Materials via Friction Force Microscopy: From 2D MXene to Self-Assembled Biomaterials" 79th Korea Tribology Society, Jeju, Korea (2026) – **Best Oral Award**

2. **Hong Yeon Yoon**, and Jeong Young Park*, "Influence of X Elements on the Tribological Properties and Surface Chemistry of MXene Atomic Layers" 136th General Meeting of the Korean Chemical Society. Changwon, Korea (2025) - Poster

3. **Hong Yeon Yoon**, and Jeong Young Park*, "Influence of X Elements on the Tribological Properties and Surface Chemistry of MXene Atomic Layers", The 6th International Workshop on Scanning Probe Microscopy, Dajeon, Korea (2025) – **Best Oral Award**

4. **Hong Yeon Yoon**, and Jeong Young Park*, "Investigating Nanoscale Friction on Two-dimensional Atomic Layers Using Friction Force Microscopy", 77th Korea Tribology Society, Yeongju, Korea (2025) – **Best Oral Award**

5. **Hong Yeon Yoon**, and Jeong Young Park*, "Investigation on Tribological and Surface Properties of Two - Dimensional MXene Atomic Layers" 134th Korean Chemical Society Symposium, Daegu, Korea (2024) - Poster

6. **Hong Yeon Yoon**, and Jeong Young Park*, "Exploring Enhanced Friction at Atomic Step Edges of Confined Water Layers Using Friction Force Microscopy" Tribology Gordon Research Conference, Lewiston, Maine, United States, (2024) – Poster

7. **Hong Yeon Yoon**, and Jeong Young Park*, "Exploring Enhanced Friction at Atomic Step Edge of Confined Water Layers Using Friction Force Microscopy.", 75th Korea Tribology Society, Jeju, Korea (2024) – **Poster Award**

8. **Hong Yeon Yoon**, Dooho Lee, Jeong Young Park*, "Enhanced Friction on Confined Water Step Edge Probed with Friction Force Microscopy", The 4th International Workshop of Scanning Probe Microscopy, Jeonju, Korea (2023) – **Poster Award**

9. **Hong Yeon Yoon**, and Jeong Young Park*, “In-Situ Nanoscale Tribochemical Measurement by Using Electrochemical Atomic Force Microscopy (EC-AFM)” 3rd Korea-Tribology International Symposium, Busan, Korea (2023) - Poster

10. **Hong Yeon Yoon**, and Jeong Young Park*, “AFM Probing of Nanoscale Triboelectric Charge on Gamma-ray Irradiated Fluorinated Ethylene Propylene (FEP)”, The 3rd International Workshop on Scanning Probe Microscopy, Pohang, Korea (2022) - Poster

11. **Hong Yeon Yoon**, and Jeong Young Park*, “AFM Probing of Nanoscale Triboelectric Charge on Gamma-ray Irradiated Fluorinated Ethylene Propylene (FEP)”, 130th General Meeting of the Korean Chemical Society. Gyeongju, Korea (2022) – Poster

Award:

1. **Hong Yeon Yoon**, and Jeong Young Park*, “Nanoscale Friction of Novel Materials via Friction Force Microscopy: From 2D MXene to Self-Assembled Biomaterials” 79th Korea Tribology Society, Jeju, Korea (2026) – **Best Oral Award**

2. **Hong Yeon Yoon**, and Jeong Young Park*, “Influence of X Elements on the Tribological Properties and Surface Chemistry of MXene Atomic Layers”, The 6th International Workshop on Scanning Probe Microscopy, Dajeon, Korea (2025) – **Best Oral Award**

3. **Hong Yeon Yoon**, and Jeong Young Park*, “Investigating Nanoscale Friction on Two-dimensional Atomic Layers Using Friction Force Microscopy”, 77th Korea Tribology Society, Yeongju, Korea (2025) – **Best Oral Award**

4. **Hong Yeon Yoon**, and Jeong Young Park*, “Exploring Enhanced Friction at Atomic Step Edge of Confined Water Layers Using Friction Force Microscopy.”, 75th Korea Tribology Society, Jeju, Korea (2024) – **Poster Award**

5. **Hong Yeon Yoon**, Dooho Lee, Jeong Young Park*, “Enhanced Friction on Confined Water Step Edge Probed with Friction Force Microscopy”, The 4th International Workshop of Scanning Probe Microscopy, Jeonju, Korea (2023) – **Poster Award**

Patent:

Research Topics:

Surface characterization

Nanotribology