

Curriculum Vitae

Dr.-Ing. Se-Ho Kim

Assistant Professor at Korea University
Materials Science and Engineering Department
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Education

RWTH Aachen University: Materials Science (Dr.-Ing) Supervisor: Prof. Dierk Raabe <i>Thesis: Engineering Impurities in Colloidal Nanostructures used in 'Green Hydrogen' Generation</i>	Jun 2021
Korea Advanced Institute of Science and Technology: Materials Science (M.Sc) Supervisor: Prof. Pyuck-Pa Choi	Aug 2018
University of British Columbia: Chemical Engineering (B.A.Sc)	May 2016

Employment

Korea University (Assistant Professor)	Mar 2023 – Current
Max-Planck-Institut für Eisenforschung (External Researcher)	Mar 2023 – Current
Max-Planck-Institut für Eisenforschung (Project/Deputy Group Leader) Supervisor: Prof. Baptiste Gault	July 2021 – Feb 2023

Academic Achievement and Award

EW Müller Outstanding Emerging Scientist Award	Nov 2021
Borchers Badge Award	Sep 2021
Summa Cum Laude at RWTH Aachen Univ.	Jun 2021
Korea National Science & Technology Scholarship	Sep 2016
Dean's Honour List at UBC	May 2016
Class 1 in Chemical Engineering at UBC	May 2016

Technology Transfer

Atomic Oxford Ltd.

HARDWARE: Particle Deposition Block

Product specifications: used to prepare particulates for FIB liftout, PTFE Construction to maximise cleanliness, compact size, can be used as part of a 2 or 3-wire electrochemical cell

Research Publication (< 5 years)

1. Rivas, Nicolás A Rivas; Manjón, Alba Garzón; Vega-Paredes, Miquel; Kim, Se-Ho; Gault, Baptiste; Jun, Hosun; Jung, Chanwon; Berova, Viktoriya; Hengge, Katharina; Jurzinsky, Tilman; "Chemistry and microstructure of C-supported Ru catalyst nanoparticles: A correlative study" *Ultramicroscopy*, 254, 113831 (2023)
2. Yoo, Su-Hyun; Aota, Leonardo Shoji; Shin, Sangyong; El-Zoka, Ayman A; Kang, Phil Woong; Lee, Yonghyuk; Lee, Hyunjo; Kim, Se-Ho; Gault, Baptiste; "Dopant Evolution in Electrocatalysts after Hydrogen Oxidation Reaction in an Alkaline Environment" *ACS Energy Letters*, 8, 8, 3381-3386 (2023)
3. Singh, Mahander P; Woods, Eric V; Kim, Se-Ho; Jung, Chanwon; Aota, Leonardo S; Gault, Baptiste; "Facilitating the systematic nanoscale study of battery materials by atom probe tomography through in-situ metal coating" *arXiv preprint arXiv:2309.07842* (2023)
4. Schwarz, Tim M; Woods, Eric; Singh, Mahander P; Jung, Chanwon; Aota, Leonardo S; Jang, Kyuseon; Krämer, Mathias; Kim, Se-Ho; McCarroll, Ingrid; Gault, Baptiste; "In-situ metallic coating of atom probe specimen for enhanced yield, performance, and increased field-of-view" *arXiv preprint arXiv:2309.07836* (2023)

5. Woods, Eric V; [Kim, Se-Ho](#); El-Zoka, Ayman A; Stephenson, Leigh T; Gault, Baptiste; “Scalable Substrate Development for Aqueous Biological Samples for Atom Probe Tomography” arXiv preprint arXiv:2308.16672 (2023)
6. Krämer, Mathias; Favelukis, Bar; El-Zoka, Ayman A; Sokol, Maxim; Rosen, Brian A; Eliaz, Noam; [Kim, Se-Ho](#); Gault, Baptiste; “Near-Atomic Scale Perspective on the Oxidation of Ti₃C₂T_x MXenes: Insights from Atom Probe Tomography” arXiv preprint arXiv:2305.19822 (2023)
7. Kim, Se-Ho; Stephenson, Leigh T; Schwarz, Torsten; Gault, Baptiste; „Chemical Analysis for Alkali Ion-exchanged Glass Using Atom Probe Tomography” *Microscopy and Microanalysis*, 29, 3, 890-899 (2023)
8. Woods, Eric V; Singh, Mahander P; [Kim, Se-Ho](#); Schwarz, Tim M; Douglas, James O; El-Zoka, Ayman; Giuliani, Finn; Gault, Baptiste; “A versatile and reproducible cryo-sample preparation methodology for atom probe studies” arXiv preprint arXiv:2303.18048 (2023)
9. Ma, Yan; Bae, Jae Wung; [Kim, Se-Ho](#); Jovičević-Klug, Matic; Li, Kejiang; Vogel, Dirk; Ponge, Dirk; Rohwerder, Michael; Gault, Baptiste; Raabe, Dierk; “Reducing iron oxide with ammonia: a sustainable path to green steel” *Advanced Science*, 2300111 (2023)
10. [Kim, Se-Ho](#); Jun, Hosun; Jang, Kyuseon; Choi, Pyuck-Pa; Gault, Baptiste; Jung, Chanwon; “Exploring the Surface Segregation of Rh Dopant in PtNi Nanoparticles through Atom Probe Tomography Analysis” arXiv preprint arXiv:2303.10548 (2023)
11. [Kim, Se-Ho](#); Shin, Kihyun; Zhou, Xuyang; Jung, Chanwon; Kim, Hyun You; Pedrazzini, Stella; Conroy, Michele; Henkelman, Graeme; Gault, Baptiste; “Atom probe analysis of BaTiO₃ enabled by metallic shielding” *Scripta Materialia*, 229, 115370 (2023)
12. Aota, Leonardo Shoji; Jung, Chanwon; Zhang, Siyuan; [Kim, Se-Ho](#); Gault, Baptiste; “Revealing compositional evolution of PdAu electrocatalyst by atom probe tomography” *ACS Energy Letters*, 8, 2824-2830, (2023)
13. [Kim, Se-Ho](#); Yoo, Su-Hyun; Aota, Leonardo Shoji; El-Zoka, Ayman; Kang, Philwoong; Lee, Yonghyuk; Gault, Baptiste; “B dopant evolution in Pd catalysts after H evolution/oxidation reaction in alkaline environment” arXiv preprint arXiv:2302.02588 (2023)
14. El-Zoka, Ayman A; Stephenson, Leigh T; [Kim, Se-Ho](#); Gault, Baptiste; Raabe, Dierk; “The Fate of Water in Hydrogen-Based Iron Oxide Reduction” *Advanced Science*, 2300626 (2023)
15. [Kim, Se-Ho](#); Stephenson, Leigh T; da Silva, Alisson K; Gault, Baptiste; El-Zoka, Ayman A; “Phase separation and anomalous shape transformation in frozen microscale eutectic indium-gallium upon remelting” *Materialia*, 26, 101595, (2022)
16. Zhou, Xuyang; Bai, Yang; El-Zoka, Ayman A; [Kim, Se-Ho](#); Ma, Yan; Liebscher, Christian H; Gault, Baptiste; Mianroodi, Jaber R; Dehm, Gerhard; Raabe, Dierk; “Effect of Pore Formation on Redox-Driven Phase Transformation” *Physical Review Letters*, 130, 16, 168001 (2023)
17. Singh, Mahander P; [Kim, Se-Ho](#); Zhou, Xuyang; Kwak, Hiram; Kwiatkowski da Silva, Alisson; Antonov, Stoichko; Aota, Leonardo Shoji; Jung, Chanwon; Jung, Yoon Seok; Gault, Baptiste; “Near-Atomic-Scale Evolution of the Surface Chemistry in Li [Ni, Mn, Co] O₂ Cathode for Li-Ion Batteries Stored in Air” *Advanced Energy and Sustainability Research*, 4,1, 2200121 (2023)
18. Zhou, Xuyang; Kasian, Olga; Luo, Ting; [Kim, Se-Ho](#); Zhang, Chenyu; Zhang, Siyuan; Lee, Subin; Thompson, Gregory B; Dehm, Gerhard; Gault, Baptiste; “Chemical Partitioning at Crystalline Defects in PtAu as a Pathway to Stabilize Electrocatalysts” arXiv preprint arXiv:2209.13166, (2022)
19. [Kim, Se-Ho](#); Dong, Kang; Zhao, Huan; El-Zoka, Ayman A; Zhou, Xuyang; Woods, Eric V; Giuliani, Finn; Manke, Ingo; Raabe, Dierk; Gault, Baptiste; “Understanding the degradation of a model Si anode in a Li-ion battery at the atomic scale” *The Journal of Physical Chemistry Letters*, 13, 36, 8416-8421 (2022)
20. [Kim, Se-Ho](#); Stephenson, Leigh T; Schwarz, Torsten; Gault, Baptiste; “Revisiting in-depth chemical analysis for alkali ions-exchanged glass” arXiv preprint arXiv:2203.16389. (2022)
21. Gault, Baptiste; Schweinar, Kevin; Zhang, Siyuan; Lahn, Leopold; Scheu, Christina; [Kim, Se-Ho](#); Kasian, Olga; “Correlating atom probe tomography with x-ray and electron spectroscopies to understand microstructure-activity relationships in electrocatalysts” *MRS Bulletin*, 47, 7, 718-726 (2022)
22. [Kim, Se-Ho](#); Yoo, Su-Hyun; Shin, Sangyong; El-Zoka, Ayman A; Kasian, Olga; Lim, Joohyun; Jeong, Jiwon; Scheu, Christina; Neugebauer, Jörg; Lee, Hyunjo; “Controlled doping of electrocatalysts through engineering impurities” *Advanced Materials*, 34, 28, 2203030 (2022)
23. Khanchandani, Heena; El-Zoka, Ayman A; [Kim, Se-Ho](#); Tezins, Uwe; Vogel, Dirk; Sturm, Andreas; Raabe, Dierk; Gault, Baptiste; Stephenson, Leigh T; “Laser-equipped gas reaction chamber for probing environmentally sensitive materials at near atomic scale” *Plos one*, 17, 2, e0262543 (2022)
24. [Kim, Se-Ho](#); Yoo, Su-Hyun; Chakraborty, Poulami; Jeong, Jiwon; Lim, Joohyun; El-Zoka, Ayman A; Zhou, Xuyang; Stephenson, Leigh T; Hickel, Tilmann; Neugebauer, Jörg; “Understanding alkali contamination in colloidal nanomaterials to unlock grain boundary impurity engineering” *Journal of the American Chemical Society*, 144, 2, 987-994 (2022)
25. [Kim, Se-Ho](#); El-Zoka, Ayman A; Gault, Baptiste; “A liquid metal encapsulation for analyzing porous nanomaterials by atom probe tomography” *Microscopy and Microanalysis*, 28, 4, 1198-1206 (2022)
26. Yoo, Su-Hyun; [Kim, Se-Ho](#); Woods, Eric; Gault, Baptiste; Todorova, Mira; Neugebauer, Jörg; “Origins of the hydrogen signal in atom probe tomography: Case studies of alkali and noble metals” *New Journal of Physics*, 24, 1, 13008 (2022)

27. Jung, Chanwon; Jun, Hosun; Jang, Kyuseon; Kim, Se-Ho; Choi, Pyuck-Pa; "Tracking the Mn diffusion in the carbon-supported nanoparticles through the collaborative analysis of atom probe and evaporation simulation" *Microscopy and Microanalysis*, 28, 6, 1841-1850 (2022)
28. Kim, Se-Ho; Antonov, Stoichko; Zhou, Xuyang; Stephenson, Leigh T; Jung, Chanwon; El-Zoka, Ayman A; Schreiber, Daniel K; Conroy, Michele; Gault, Baptiste; "Atom probe analysis of electrode materials for Li-ion batteries: challenges and ways forward" *Journal of Materials Chemistry A*, 10, 9, 4926-4935 (2022)
29. Johnny, Jacob; Prymak, Oleg; Kamp, Marius; Calvo, Florent; Kim, Se-Ho; Tymoczko, Anna; El-Zoka, Ayman; Rehbock, Christoph; Schürmann, Ulrich; Gault, Baptiste; "Multidimensional thermally-induced transformation of nest-structured complex Au-Fe nanoalloys towards equilibrium" *Nano Research*, 15, 1, 581-592, (2022)
30. Stender, Patrick; Gault, Baptiste; Schwarz, Tim M; Woods, Eric V; Kim, Se-Ho; Ott, Jonas; Stephenson, Leigh T; Schmitz, Guido; Freysoldt, Christoph; Kästner, Johannes; "Status and direction of atom probe analysis of frozen liquids" *Microscopy and Microanalysis*, 28, 4, 1150-1167 (2022)
31. Jang, Kyuseon; Kim, Se-Ho; Jun, Hosun; Jung, Chanwon; Yu, Jiwon; Lee, Sangheon; Choi, Pyuck-Pa; "Three-dimensional atomic mapping of ligands on palladium nanoparticles by atom probe tomography" *Nature communications*, 12, 1, 4301 (2021)
32. Kim, Se-Ho; Zhang, Xue; Ma, Yan; Souza Filho, Isnaldi R; Schweinar, Kevin; Angenendt, Katja; Vogel, Dirk; Stephenson, Leigh T; El-Zoka, Ayman A; Mianroodi, Jaber Rezaei; "Influence of microstructure and atomic-scale chemistry on the direct reduction of iron ore with hydrogen at 700 °C" *Acta Materialia*, 212, 116933 (2021)
33. Khanchandani, Heena; Kim, Se-Ho; Varanasi, Rama Srinivas; Prithiv, TS; Stephenson, Leigh T; Gault, Baptiste; "Hydrogen and deuterium charging of site-specific specimen for atom probe tomography" *Open Research Europe*, 1, 122 (2021)
34. Kim, Se-Ho; Lim, Joohyun; Sahu, Rajib; Kasian, Olga; Stephenson, Leigh T; Scheu, Christina; Gault, Baptiste; "Direct imaging of dopant and impurity distributions in 2D MoS₂" *Advanced Materials*, 32, 8, 1907235 (2020)
35. Lim, Joohyun; Kim, Se-Ho; Aymerich Armengol, Raquel; Kasian, Olga; Choi, Pyuck-Pa; Stephenson, Leigh T; Gault, Baptiste; Scheu, Christina; "Atomic-Scale Mapping of Impurities in Partially Reduced Hollow TiO₂ Nanowires" *Angewandte Chemie International Edition*, 59, 14, 5651-5655, (2020)
36. Kim, Se-Ho; Jang, Kyuseon; Kang, Phil Woong; Ahn, Jae-Pyoung; Seol, Jae-Bok; Kwak, Chang-Min; "Hatzoglou, Constantinos; Vurpillot, Francois; Choi, Pyuck-Pa; "Characterization of Pd and Pd@ Au core-shell nanoparticles using atom probe tomography and field evaporation simulation" *Journal of Alloys and Compounds*, 831, 154721 (2020)
37. Zhang, Siyuan; Ahmet, Ibbi; Kim, Se-Ho; Kasian, Olga; Mingers, Andrea M; Schnell, Patrick; Kölbach, Moritz; Lim, Joohyun; Fischer, Anna; Mayrhofer, Karl JJ; "Different photostability of BiVO₄ in near-pH-neutral electrolytes" *ACS applied energy materials*, 3, 10, 9523-9527 (2020)
38. Nadarajah, Ruksan; Tahir, Shabbir; Landers, Joachim; Koch, David; Semisalova, Anna S; Wiemeler, Jonas; El-Zoka, Ayman; Kim, Se-Ho; Utzat, Detlef; Möller, Rolf; "Controlling the oxidation of magnetic and electrically conductive solid-solution iron-rhodium nanoparticles synthesized by laser ablation in liquids" *Nanomaterials*, 10, 12, 2362 (2020)
39. El-Zoka, Ayman A; Kim, Se-Ho; Deville, Sylvain; Newman, Roger C; Stephenson, Leigh T; Gault, Baptiste; "Enabling near-atomic-scale analysis of frozen water" *Science Advances*, 6, 49, eabd6324 (2020)
40. Kim, Kihwan; Kim, Juran; Gang, Myeng Gil; Kim, Se-Ho; Song, Soomin; Cho, Yuna; Shin, Donghyeop; Eo, Young-Joo; Jeong, Inyoung; Ahn, Seung Kyu; "A simple and robust route toward flexible CIGS photovoltaic devices on polymer substrates: Atomic level microstructural analysis and local opto-electronic investigation" *Solar Energy Materials and Solar Cells*, 195, 280-290 (2019)
41. Kim, Se-Ho; Lee, Ji Yeong; Ahn, Jae-Pyoung; Choi, Pyuck-Pa; "Fabrication of Atom Probe Tomography Specimens from Nanoparticles Using a Fusible Bi-In-Sn Alloy as an Embedding Medium" *Microscopy and Microanalysis*, 25, 2, 438-446 (2019)
42. Jeong, Hyeonuk; Kim, Se-Ho; Choi, Won Seok; Choi, Pyuck-Pa; "Spallation resistance of oxide scales on Alloy 617 enhanced by boron addition" *Corrosion Science*, 140, 196-204 (2018)
43. Kim, Se-Ho; Kang, Phil Woong; Park, O Ok; Seol, Jae-Bok; Ahn, Jae-Pyoung; Lee, Ji Yeong; Choi, Pyuck-Pa; "A new method for mapping the three-dimensional atomic distribution within nanoparticles by atom probe tomography (APT)" *Ultramicroscopy*, 190, 30-38 (2018)

Supervising Experience

Dr Kim is now leading and coordinating groups at Korea University (3 graduate students) and Max-Planck-Institut (1 postdoc, 3 starting PhD students), targeting pushing the limits of APT to advance energy material and microscopy techniques.

Declaration

I hereby affirm that the information in this document is accurate and true to the best of my knowledge.

2023. 10. 17