

Curriculum Vitae

Hana Yoon

Separation and Conversion Materials Laboratory, KIER, Daejeon 305-343, Korea

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EDUCATION

- **Ph.D.** Department of Chemistry, KAIST, Korea (Aug. 2011).

Advisor: Prof. Bongsoo Kim

(Thesis Title: Metal Silicide and Germanide 1D Nanostructures: Synthesis, Characterization, and Applications.)

- **M.S.** Department of Chemistry, KAIST, Korea (Feb. 2007).

Advisor: Prof. Bongsoo Kim

(Thesis Title: Synthesis and Field-Emission Properties of ZnO Nanowires on the Transparent Conducting Substrates.)

- **B.S.** Double major Biology and Chemistry, Dongguk University, Korea (Feb. 2005).

(Thesis Title: Cloning and Expression of Gene Encoding the E-cadherin Epitope.)

RESEARCH ACTIVITIES

- **Korea Institute of Energy Research (KIER), Separation and Conversion Materials Laboratory, Senior Researcher (Jan. 2013 ~)**

Research Topic: Development of nano/micro electrode materials for next-generation rechargeable energy storage devices. Electrochemical capacitors (EDLCs, pseudocapacitors), Rechargeable Al batteries

- **Chungnam National University, Graduate School of Energy Science and Technology, Adjunct Professor (Sept. 2017 ~)**

- **Technical University of Munich (TUM), Dept. of Chemistry, Postdoctoral Researcher (2012)**

Research Topic: Synthesis of lithium metal phosphate nanomaterials for LIBs

- **KAIST, Dept. of Chemistry, Postdoctoral Researcher (Aug. 2011 – Dec. 2011)**

Research Topic: Synthesis and Application of metal silicide, germanide and germanate nanowires

; Study on the dynamics of Mn-germanate, such as MnGeO_3 and Mn_2GeO_4 , nanowires and nanobelts via in-situ TEM observation.

AWARDS

1. **Samsung Human-Tech Thesis Prize (Bronze Prize) 2011.**
2. **Best Paper Award from Center for Intelligent Nanobio-Materials (CINBM) at Ewha Womans University 2011** "Structure-induced Ferromagnetic Stabilization in Freestanding Hexagonal $\text{Fe}_{1.3}\text{Ge}$ Nanowires", **H. Yoon**, A. T. Lee, E. A. Choi, K. Seo, N. Bagkar, J. Cho, Y. Jo, K. J. Chang, and B. Kim, *J. Am. Chem. Soc.* **132**, 17447 (2010).
3. **Best Paper Award from Center for Intelligent Nanobio-Materials (CINBM) at Ewha Womans University 2010** "Vertical Epitaxial Co_5Ge_7 Nanowire and Nanobelt Arrays on a Thin Graphitic Layer for Flexible Field Emission Display", **H. Yoon**, K. Seo, N. Bagkar, J. In, J. Park, J. Kim, and B. Kim, *Adv. Mater.* **21**, 4979 (2009).
4. **Oral Present Award (Gold Prize) at The 1st BK21 Student Symposium, KAIST 2007**

PUBLICATIONS

1. J. Lee, Y. A. Lee, C. -Y. Yoo, J. J. Yoo, R. Gwak, W. K. Cho. B. Kim,* and **H. Yoon***, "Self-templated synthesis of interconnected porous carbon nanosheets with controllable pore size: Mechanism and electrochemical capacitor application" *Microporous Mesoporous Mater.* **2018**, *261*, 119. (*corresponding authors) (IF 3.649)
2. C. -Y. Yoo, Y. Kim, J. Hwang, **H. Yoon**, B. J. Cho, G. Min, and S. H. Park, "Impedance spectroscopy for assessment of thermoelectric module properties under a practical operating temperature" *Energy*, **2018**, *152*, 834. (IF 4.968)
3. Y. A. Lee, J. Lee, D. W. Kim, C. -Y. Yoo, S. H. Park, J. J. Yoo, S. Kim, B. Kim,* W. K. Cho,* and **H. Yoon***, "Mussel-inspired surface functionalization of porous carbon nanosheets using polydopamine and Fe^{3+} /tannic acid layers for high-performance electrochemical capacitors" *J. Mater. Chem. A*, **2017**, *5*, 25368. (*corresponding authors) (IF 9.931)

4. J. Yoo, Y. Kim, C. -W. Lee, **H. Yoon**, S. Yoo, and H. Jeong, "Volumetric Capacitance of In-Plane- and Out-of-Plane-Structured Multilayer Graphene Supercapacitors" *J. Electrochem. Sci. Technol.*, **2017**, 8, 250. (IF 0.972)
5. X. T. Geng, B. J. Chun, J. H. Seo, K. Seo, **H. Yoon**, D. -E. Kim, Y. -J. Kim*, and S. Kim*, "Frequency comb transferred by surface plasmon resonance," *Nat. Commun.*, **2016**, 7, 10685. (IF 12.353)
6. C. -Y. Yoo, J. Park, D. S. Yun, J. H. Yu, **H. Yoon**, J. -N. Kim, H. C. Yoon, M. Kwak, and Y. -C. Kang, "Crucial role of a nickel substrate in Co₃O₄ pseudocapacitor directly grown on nickel and its electrochemical properties" *J. Alloys Compd.*, **2016**, 676, 407. (IF 3.779)
7. C. -Y. Yoo, J. H. Park, D. S. Yun, Y. A. Lee, K. S. Yun, J. H. Lee, **H. Yoon**, J. H. Joo, and J. H. Yu, "Unraveling Crystal Structure and Transport Properties of Fast Ion Conducting SrCo_{0.9}Nb_{0.1}O_{3-δ}" *J. Phys. Chem. C* **2016**, 120, 22248. (IF 4.484)
8. **H. Yoon**,* H. -J. Kim, J. J. Yoo, C. -Y. Yoo, J. H. Park, Y. A. Lee, W. K. Cho, Y. -K. Han,* and D. H. Kim, "Pseudocapacitive slurry electrodes using redox-active quinone for high-performance flow capacitors: an atomic-level understanding of pore texture and capacitance enhancement" *J. Mater. Chem. A*, **2015**, 3, 23323. (*first & corresponding authors) (IF 9.931)
9. S. -H. Yeon,* **H. Yoon**, S. -H. Lee, J. E. Kim, S. Lim, K. -H. Shin, H. S. Park, C. -S. Jin, W. Ahn, H. -W. Cheong, Y. Choi, and H. -R. Yu, "Enhanced anode performance of micro/mesoporous reduced graphene oxide prepared from carbide-derived carbon for energy storage devices" *Carbon*, **2015**, 91, 241. (IF 7.082)
10. S. I. Kim, **H. Yoon**, H. Lee, S. Lee, Y. Jo, S. Lee,* J. Choo,* and B. Kim,* "Epitaxy-driven vertical growth of single-crystalline cobalt nanowire arrays by chemical vapor deposition" *J. Mater. Chem. C*, **2015**, 3, 100. (IF 5.976)
11. S. -H. Yeon,* D. -H. Kim, D. Kim, S. -K. Park, **H. Yoon**, J. Yoo, K. -H. Shin, C. -S. Jin,

Y. J. Lee, and S. -Y. Lee, "Cyclic ultracapacitor for fast-charging and scalable energy storage system" *Energy*, **2015**, *93*, 210. (IF 4.968)

12. Y. J. Oh, J. J. Yoo, Y. I. Kim, J. K. Yoon, **H. Yoon**, J. -H. Kim, and S. B. Park, "Oxygen functional groups and electrochemical capacitive behavior of incompletely reduced graphene oxides as a thin-film electrode of supercapacitors" *Electrochim. Acta*, **2014**, *116*, 118. (IF 5.116)

13. **H. Yoon**,* S. I. Kim,* S. Lee, J. In, J. Kim, H. Ryoo, J. H. Noh, J. P. Ahn, Y. Jo, J. Choo and B. Kim, "Three-dimensionally kinked high-conducting CoGe nanowire growth induced by rotational twinning" *J. Mater. Chem. C*, **2013**, *1*, 6259. (*co-first author) (IF 5.976)

14. S. Kim, **H. Yoon**, K. Seo, Y. Yoo, S. Lee, B. Kim, "Truncated Tetrahedron Seed Crystals Initiating Stereoaligned Growth of FeSi NWs", *ACS Nano*, **2012**, *6*, 8652. (IF 13.709)

15. **H. Yoon**, Y. Yoo, K. Seo, J. In, and B. Kim, "Synthesis and Applications of Noble Metal and Metal Silicide and Germanide 1-Dimensional Nanostructures", *Bull. Korean Chem. Soc*, **2012**, *33*, 2830. (first author) (IF 0.522)

16. S. Lee, **H. Yoon**, I. Yoon, B. Kim "Single Crystalline NbO₂ Nanowire Synthesis by Chemical Vapor Transport Method" *Bull. Korean Chem. Soc*, **2012**, *33*, 839. (IF 0.522)

17. **H. Yoon**, T. Kang, J. M. Lee, Si-in Kim, K. Seo, J. Kim, W. I. Park, and B. Kim, "Epitaxially Integrating Ferromagnetic Fe_{1.3}Ge Nanowire Arrays on Few-Layer Graphene" *J. Phys. Chem. Lett.* **2011**, *2*, 956. (first author) (IF 8.709)

[Highlighted in Nature Asia Materials, doi:10.1038/asiamat.2011.112]

18. **H. Yoon**, A. T. Lee, E. A. Choi, K. Seo, N. Bagkar, J. Cho, Y. Jo, K. J. Chang, and B. Kim, "Structure-induced Ferromagnetic Stabilization in Freestanding Hexagonal Fe_{1.3}Ge Nanowires" *J. Am. Chem. Soc.* **2010**, *132*, 17447. (first author) (IF 14.357)

19. K. Seo, * **H. Yoon**,* S. -W. Ryu, S. Lee, Y. Jo, M. -H. Jung, J. Kim, Y. -K. Choi, and B. Kim, "Itinerant Helimagnetic Single-Crystalline MnSi Nanowires". *ACS Nano* **2010**, *4*, 2569. (*co-first author) (IF 13.709)
20. K. Seo, N. Bagkar, S. -I. Kim, J. In, **H. Yoon**, Y. Jo, and B. Kim, "Diffusion-Driven Crystal Structure Transformation: Synthesis of Heusler Alloy Fe₃Si Nanowires" *Nano. Lett.* **2010**, *10*, 3643. (IF 12.080)
21. N. Bagkar, K. Seo, **H. Yoon**, J. In, Y. Jo, and B. Kim. "Vertically Aligned Single-crystalline Ferromagnetic Ni₃Co Nanowires" *Chem. Mater.* **2010**, *22*, 1831. (IF 9.890)
22. **H. Yoon**, K. Seo, N. Bagkar, J. In, J. Park, J. Kim, and B. Kim, "Vertical Epitaxial Co₅Ge₇ Nanowire and Nanobelt Arrays on a Thin Graphitic Layer for Flexible Field Emission Display". *Adv. Mater.* **2009**, *21*, 4979. (first author) (IF 21.95)
23. K. Seo, S. Lee, **H. Yoon**, J. In, K. S. K. Varadwaj, Y. Jo, M-H. Jung, J. Kim, and B. Kim, "Composition-Tuned Co_nSi Nanowires: Location-Selective Simultaneous Growth along Temperature Gradient" *ACS Nano* **2009**, *3*, 1145. (IF 13.709)
24. J. In, K. Seo, S. Lee, **H. Yoon**, J. Park, G.H. Lee, and B. Kim, "Morphology-tuned Synthesis of Single-Crystalline V₅Si₃ Nanotubes and Nanowires" *J. Phys. Chem. C* **2009**, *113*, 12996. (IF 4.484)
25. **H. Yoon**, K. Seo, H. Moon, K. S. K. Varadwaj, J. In, and B. Kim, "Aluminum foil mediated non-catalytic growth of ZnO nanowire arrays on an ITO substrate", *J. Phys. Chem. C* **2008**, *112*, 9181. (first author) (IF 4.484)

26. **H. Yoon**, K. Seo, J. In, and B. Kim, "Metal Silicide and Germanide 1D Nanostructures: Synthesis, Characterization, and Applications" in Handbook of Innovative Nanomaterials: From Synthesis and Applications, Pan Stanford Publishing Pte Ltd, 2012.

PATENTS

1. 박상현, 유충열, **윤하나**, 김영선, 조병진, "SnSe 열전소재의 메탈라이징 방법, SnSe 열전소재용 다층 메탈라이징 구조, 메탈라이징 처리된 SnSe 열전소재 및 이의 제조방법". (Patent No. 10-1857442 (대한민국), 등록 일자: 2018-05-08).

2. 박상현, 유충열, **윤하나**, 조병진, "열전소재의 전극 브레이징 공정 최적화 방법, 이를 이용한 브레이징 필러 선정방법, 열전소재의 전극 브레이징 방법 및 열전소재의 전극 브레이징 장치". (Patent No. 10-1827732 (대한민국), 등록 일자: 2018-02-05).

3. 연순화, 신경희, 전재덕, 유정준, **윤하나**, 진창수, 심준목, 양정훈, 정규남, 김동하, 박세국, "흐름식 에너지 저장장치 및 그에 사용되는 반응셀". (Patent No. 10-1830079 (대한민국), 등록 일자: 2018-02-12).

4. 유정준, 김종휘, 윤재국, 김용일, **윤하나**, "밀봉 소재, 이에 의한 유연 박막형 슈퍼커패시터 소자 제조 방법 및 이에 의한 슈퍼커패시터 소자". (Patent No. 10-1812376 (대한민국), 등록 일자: 2017-12-19).

5. 유정준, 김종휘, 윤재국, 김용일, **윤하나**, " 밀봉 소재, 이에 의한 유연 박막형 슈퍼커패시터 소자 제조 방법 및 이에 의한 슈퍼커패시터 소자". (Patent No. 9,842,706 (미국), 등록 일자: 2017-12-12).

6. 유충열, 박상현, **윤하나**, 황주연, 김영선, "교류 임피던스 데이터를 이용한 열전모듈 특성평가 그래픽 기반 프로그램 (프로그램 (S/W), 등록번호: C-2017-030929, 등록 일자: 2017-12-01)

7. **윤하나**, 유정준, 연순화, "고용량 슬러리 전극 및 고용량 슬러리 전극 기반의 플로우 에너지저장장치". (Patent No. 9,793,063 (미국), 등록 일자: 2017-10-17).

8. 연순화, 김대위, 박세국, 신경희, 유정준, **윤하나**, 전재덕, 김선동, 김현욱, "스택형 플로우 에너지 저장 장치 및 그 용도". (Patent No. 9,761,379 (미국), 등록

일자: 2017-09-12).

9. 유정준, 김종휘, 윤재국, 김용일, 윤하나, "유연 박막형 슈퍼커패시터 소자 제조 방법 및 이에 의한 슈퍼커패시터 소자". (Patent No. 9,520,243 (미국), 등록 일자: 2016-12-13).
10. 윤하나, 연순화, 유정준, "고용량 슬러리 전극 및 고용량 슬러리 전극 기반의 플로우 에너지저장장치". (Patent No. 10-1596218 (대한민국), 등록 일자: 2016-02-16).
11. 김종휘, 윤하나, 김용일, 유정준, 윤재국, "3차원 계층구조의 바이오 나노 활성탄 및 제조방법". (Patent No. 10-1565036 (대한민국), 등록 일자: 2015-10-27).
12. 연순화, 김대위, 박세국, 신경희, 유정준, 윤하나, 전재덕, 김선동, 김현욱, "스택형 플로우 에너지 저장 장치 및 그 용도". (Patent No. 10-1520394 (대한민국), 등록 일자: 2015-05-08).
13. B. Kim, H. Yoon, and K. Seo "Method for Vertical Growth of ZnO Nanowires on ITO substrate". (Patent No. 10-0836890).
14. B. Kim and H. Yoon, "Single Crystalline $\text{Co}_x\text{Ge}_{1-x}$ Nanowire, $\text{Co}_x\text{Ge}_{1-x}$ Nanowire Structure, and The fabrication Method Thereof" (Patent No. 10-1071906)
15. B. Kim and H. Yoon, "Single Crystalline Iron Germanide Nanowire and Fabrication Method Thereof" (Patent No. 10-1146350)
16. B. Kim and H. Yoon, "Monoclinic Single Crystalline Cobalt Germanide Nanowire, and The Fabrication Method Thereof" (Application No. 10-2010-0039908)
17. H. Yoon, J. H. Kim, J. J. Yoo, Y. I. Kim, and J. K. Yoon, "Nanoink and method thereof, thin-film ultracapacitor electrode and method comprising the same" (Application No. 10-2013-0141870)

TEACHING EXPERIENCE

Mar. 2007 ~ Jun. 2007: **Teaching Assistant (Lab)**, Physical Chemistry Experiment, Department of Chemistry, KAIST, Korea.