

# 유효종

한양대학교 ERICA캠퍼스 [재료화학공학과](#) 교수이다.

- 전화 :+82-31-400-5224(Prof. Yoo's Office) / +82-31-400-4075(LAB)
- 주소 : 38-425(LAB) / 38-000(Office), 55 Hanyangdeahak-ro, Sangnok-gu, Ansan, Gyeonggi-do, 15588, Korea
- 홈페이지, Inorganic Materials Laboratory : <https://hjhaha73.wixsite.com/hyoogroup>

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## 학력

- 2006. 08. 이학박사, 화학과, University of Pennsylvania, USA.
- 1998. 02. 이학석사, 화학과, 서울대학교
- 1996. 02. 이학사, 화학과, 연세대학교

## 경력

- 2019 현재 교수, 한양대학교 재료화학공학과 Department of Materials Science and Chemical Engineering, Hanyang University
- 2010 2019 조/부/교수, 한림대학교 화학과
- 2009 2010 Los Alamos National Laboratory, 박사후 연구원
- 2006 2009 Northwestern University, 박사후 연구원
- 1999 2001 공군사관학교 화학과, 전임강사

## 학회활동

- 2011 현재 한국실리콘학회 총무이사, 학술이사, 기획이사
- 2013 현재 한국공업화학회 영문지 편집위원, 편집이사
- 2014 현재 J. Ind. Eng. Chem, Editor (SCI급 Journal, IF = 5.278 (2019))
- 2019 2020 한국공업화학회 콜로이드계면화학 분과회 분과회장
- 2010 현재 대한화학회 회원, 재료화학분과 총무간사 (2015년)

## 수상

- 2020 '2020년 제12회 화학산업의 날' 기념식, 산업통상자원부장관 표창
  - 화학 및 소재영역에서 기초연구성과와 화학산업 신기술 개발에 기여한 공로를 인정받음
- 2019 한양대학교 제8회 [HYU RnD 우수 아이디어 발표회](#) 발표회 우수상
- 2019 한국공업화학회 학회발전상
- 2019 한림대학교 특훈교수 선정 (Hallym Distinguished Professor, 2019-2020)
- 2018 제12회 일송상
- 2016 2019 한국공업화학회 공로상
- 2015, 2016 한국공업화학회 감사패
- 2014, 2019 한국실리콘학회 공로상
- 2013 추계 대한화학회 동우화인켐(주) 우수 포스터상
- 2012 강원지방중소기업청장상 “2011년도 산학연 공동기술개발사업 우수과제”
- 2011 한림대학교 강의우수교수 표창장

## 주요연구분야

- Synthesis and Application of Functional Nano-Hybrid Materials
- Superb-molecular Chemistry (Inorganic Supramolecular Chemistry)
- Coordination Polymers and Silicon Materials
- Materials for Energy Technology, Sensor, Catalysis, Medical Application

## 특허

국내특허등록: 20건, 국내특허등록대기: 5건, 국제특허등록: 2건

## 등록특허

- 유효종\*; 김선철, "니켈-철-셀레나이드 나노구조체 촉매를 성장시킨 니켈박막을 이용한 휘기 쉽고 효율적인 전기적 물분해반응용 전극 및 그 제조방법" 특허출원 10-2020-0077716 (2020. 09. 24)
- 유효종\*; Tran Minh Ngoc; 정소은, "돌기 섬유질형 나노실리카 코어 - Zn 기반 배위 고분자 셸 혹은 돌기 섬유질형 나노실리카/금 나노입자 코어 - Zn 기반 배위 고분자 셸의 혼성 나노구조체, 이의 생산방법 및 활용" 특허출원 10-2018-0130450 (2018. 10. 30)
- 유효종\*; Le Thi Cam Van; Hien Duy Mai, 강필재, "이종 리간드와 전이금속 이온을 함유하는 나선형 초거대분자 및 그 합성방법" 특허출원 10-2018-0123010 (2018. 10. 16)
- 유효종\*; Hien Duy Mai, "비등방성 귀금속 나노입자 코어-황화 코발트 셸 나노케이지, 그 제조방법 및 이를 포함하는 불균일성 촉매" 특허출원 10-2018-0105640 (2018. 09. 05)
- 유효종\*; Tran Minh Ngoc; Hien Duy Mai, "Zn 기반 배위 고분자 나노큐브와 Cu 치환된 Zn 기반 배위 고분자 나노큐브 및 그 합성방법" 특허등록 10-1988859 (2019. 06. 07), 특허출원 10-2018-0009064 (2018.

01. 25)

- 유효종\*; 변원균, "주름이 형성된 실리카 나노입자 코어와 금 레이어 쉘을 포함하는 나노입자, 이의 생산방법 및 응용" 특허등록 10-1995857 (2019. 06. 27), 특허출원 10-2018-0003630 (2018. 01. 11)
- 유효종\*; Hien Duy Mai; Van Cam Thi Le, "다중 가지를 갖는 금 나노입자 코어-코발트 기반 금속/유기 복합 다공체 쉘 혼성 구조체 및 그 합성방법" 특허등록 10-1952023 (2019. 02. 19), 특허출원 10-2017-0082993 (2017. 06. 30)
- 유효종\*; Hien Duy Mai; 이인미; 이상돈, "전이 금속과 알칼리 금속을 포함하는 혼합 금속-유기 구조체 및 그 합성방법" 특허등록 10-1952023 (2019. 2. 19), 특허출원 10-2017-0029851 (2017. 03. 09)
- 유효종\*; 문영서, "다중가지 금 나노입자 코어-실리카 쉘 나노입자 및 그 합성방법" 특허등록 10-1927715 (2018. 12. 05), 특허출원 10-2016-0180593 (2016. 12. 28)
- 유효종\*; 문영서, "다중가지 금 나노입자 코어-타이타니아 쉘 나노입자 및 그 합성방법" 특허등록 10-1918927 (2018. 11. 09), 특허출원 10-2016-0180594 (2016. 12. 28)
- 유효종\*; 문영서, "다중가지 금 나노입자 코어-팔라듐 쉘 나노입자 및 그 합성방법" 특허등록 10-1885561 (2018. 07. 31), 특허출원 10-2016-0173310 (2016. 12. 19)
- 유효종\*; 변원균, "금 나노입자 조합체 코어를 가진 중공형 실리카 나노튜브, 금/백금 나노입자 조합체 코어를 가진 중공형 실리카 나노튜브 및 그 합성방법" 특허등록 10-1877262 (2018. 07. 05), 특허출원 10-2016-0139973 (2016. 10. 26)
- 유효종\*; 박찬흠; Khezina Rapiq; Hien Duy Mai, "요소분해효소가 고정된 실크 피브로인과 아민화된 유리 탄소 전극을 이용한 요소 감지장치 및 그 제조방법" 특허등록 10-1883673 (2018. 07. 25), 특허출원 10-2016-0018314 (2016. 02. 17)
- 유효종\*; Hien Duy Mai; 이정희, "코발트 삼중가닥 초거대분자가 조합된 슈퍼브 분자 케이지 및 그 합성방법" 특허등록 10-1721907 (2017. 03. 27), 특허출원 10-2016-0009433 (2016. 01. 26)
- 유효종\*; 최순, "다중 가지를 지니는 별 모양 금 나노입자 및 그 제조방법" 특허등록 10-1701762 (2017. 01. 25), 특허출원 10-2015-0095224 (2015. 07. 03)
- 유효종\*; 이정희, "코발트 클러스터 기반 3중 가닥 초거대분자와 이를 이용하여 합성한 나선형 일차원성 고분자 및 그 제조방법" 특허등록 10-1737390 (2017. 05. 12), 특허출원 10-2015-0011863 (2015. 01. 26)
- 유효종\*; Hien Duy Mai, "표면적이 큰 니켈 산화물 나노구조체 및 이를 이용한 우레아제-기반 바이오센서" 특허등록 10-1635552 (2016. 06. 27), 특허출원 10-2015-0040181 (2015. 03. 23)
- 유효종\*; Diana Kostyukova, "백금 나노닷 조합체를 포함하는 코어와 실리카 외각으로 형성되는 나노입자 및 그 합성방법" 특허등록 10-1591640 (2016. 01. 29), 특허출원 10-2014-0137531 (2014. 10. 13)
- 유효종\*; 박준성, "요크-쉘 형태의 단일 금 나노닷 코어와 실리카 외각으로 이루어진 구형 나노입자 및 그 합성방법" 특허등록 10-1465440 (2014. 11. 20), 특허출원 10-2013-0091561 (2013. 08. 01)
- 유효종\*; 최순, "금 나노환상체 및 그 합성방법" 특허등록 10-1436857 (2014. 08. 27), 특허출원 10-2013-0062229 (2013. 05. 31)
- 유효종\*, "크기 제어 가능한 양추형 금 나노결정 합성방법" 특허등록 10-1468441 (2014. 11. 27), 특허출원 10-2013-0027057 (2013. 03. 14)
- 유효종\*; 박준성, "다중 금 나노닷 코어와 실리카 외각으로 이루어진 구형 나노입자 및 그 합성방법" 특허등록 10-1390657 (2014. 04. 24), 특허출원 10-2013-0018505 (2013. 02. 21)
- 유효종\*; 장민훈; 박준성, "안정화된 고발광 귀금속 나노클러스터가 도핑된 이중층 실리카 나노입자 및 그 제조방법" 특허등록 10-1400006 (2014. 05. 21), 특허출원 10-2012-0122865 (2012. 11. 01)
- 유효종\*; 장민훈, "표면적이 넓은 라즈베리 유사 귀금속 나노입자 및 그 제조방법" 특허등록 10-1400005 (2014. 05. 21), 특허출원 10-2012-0120958 (2012. 10. 30)
- Chad A. Mirkin; Hyojong Yoo; Jill E. Millstone; Jae-Won Jang; Wei Wei; "High Surface Plasmon Tunability of Triangular Bimetallic Au-Ag Nanoprisms" PCT Int. Appl. (2010), WO 2010019843 A2 20100218.
- Chad A. Mirkin; Jill E. Millstone; Wei Wei; Matthew R. Jones; Hyojong Yoo "Halide Ion Control of Seed Mediated Growth of Anisotropic Gold Nanoparticles" US2010/0092372 A1 (2010), PCT

## 출원특허

- 유효종\*; 문영서, "금 멀티포드 나노입자 코어-백금 쉘 나노입자 및 그 합성방법" 특허출원 10-2016-0104159 (2016. 08. 17)
- 유효종\*; 박준성; 한웅태, "소수성 유기물질을 함유하는 이중층 실리카 나노입자 및 그 제조방법" 특허출원 10-2012-00035815 (2012. 04. 06)

## 논문

논문: 57건 (SCI(E) 53건, 비SCI(E): 4건)

- 유효종\*; 김진경, "고분자 첨가제의 구조 및 약물방출 특성", 화학연합, 2018, 10, 48-56.
- 유효종\*; 최순, "소프트 템플레이트를 이용한 용액상에서의 금 나노와이어의 합성", 고분자 과학과 기술, 2015, 26
- 유효종\*; 최순, "재미있는 총설 - 단백질 매개의 높은 형광을 내는 금속성 나노점의 합성과 응용", 광과학세계, 2013, 48, 33
- Suncheol Kim; Hyojong Yoo\*, "Construction of Pliable Electrode System for Effective Electrochemical Oxygen Evolution Reaction; Direct Growth of Nickel Iron Selenide Nanohybrids on Nickel Foil", ACS Sustainable Chemistry & Engineering, 2020, ASAP.
- Tran Minh Ngoc; Hyojong Yoo\*, "Recent Advances in Heteroleptic Multiple-Stranded Metallosupramolecules", Dalton Transactions, 2020, 49, 11819. (Invited Frontiers Article).
- Hien Duy Mai; Suncheol Kim; Hyojong Yoo\*, "Controllable Growth of Palladium on Gold Multipod Nanoparticles and Their Enhanced Electrochemical Performances", Journal of Catalysis, 2020, 388, 20.
- Ngoc Minh Tran; Soeun Jung; Hyojong Yoo\* "“Nanospace Engineering” by the Growth of Nano Metal-Organic Framework on Dendritic Fibrous Nanosilica (DFNS) and DFNS/Gold Hybrids", Nano Research, 2020, 73, 775.
- Philjae Kang; Hyojong Yoo\*, "Coordinative Helix-Helix Association of Heteroleptic Metallosupramolecular Helicates", Inorganic Chemistry Frontiers, 2020, 7, 905.
- Hien Duy Mai; Suncheol Kim; Hyojong Yoo\*, "Gold nanodots-decorated nickel hydroxide nanoflowers for enhanced electrochemical oxygen evolution activity", Journal of Industrial and Engineering Chemistry, 2020, 82, 359.
- Hien Duy Mai; Tran Minh Ngoc; Hyojong Yoo\*, "Multilevel Coordination-Driven Assemblies for Metallosupramolecules with Hierarchical Structures" (Review Paper), Coordination Chemistry Review, 2019, 387, 180.
- Hien Duy Mai; Van Cam Thi Le; Hyojong Yoo\*, "Effective Fabrication and Electrochemical Oxygen Evolution Reaction Activity of Gold Multipod Nanoparticles Core - Cobalt Sulfide Shell Nanohybrids", ACS Applied Nano Materials, 2019, 2, 678.
- Van Cam Thi Le; Hien Duy Mai; Philjae Kang; Hyojong Yoo\*, "Metal-ion Tuning in Triple-Stranded Helicates-based Metallosupramolecules", Chemistry - A European Journal, 2019, 25, 2472.
- WonGyun Byoun; Moongyu Jang; Hyojong Yoo\*, "Fabrication of Highly Fluorescent Multiple Fe<sub>3</sub>O<sub>4</sub> Nanoparticles Core - Silica Shell Nanoparticles", Journal of Nanoparticle Research, 2019, 21, 1.
- Hien Duy Mai; Inme Lee; Hyojong Yoo\*, "Controllable Synthesis of a Highly Ordered Polymeric Structure Assembled from Cobalt-Cluster-based Racemic Supramolecules", Chemistry - An

Asian Journal, 2018, 13, 1915.

- Tran Minh Ngoc; Hien Duy Mai; Hyojong Yoo\*, "Fabrication of Zinc-based Coordination Polymer Nanocubes and Post-Modification through Copper Decoration", Nano Research, 2018, 11, 5890.
- WonGyun Byoun; Soeun Jung; Tran Minh Ngoc; Hyojong Yoo\*, "Synthesis and Application of Dendritic Fibrous Nanosilica (DFNS)/Gold (Au) Hybrid Nanomaterials", ChemistryOpen, 2018, 7, 349.
- Philjae Kang; Hien Duy Mai; Hyojong Yoo\*, "Cage-like Crystal Packing through Metallocavitands within a Cobalt Cluster-based Supramolecular Assembly", Dalton Transactions, 2018, 47, 6660.
- Tae Hyun Kim; Hyojong Yoo; Jae-Hyeon Ko\*, "Acoustic Anomalies and Fast Relaxation Dynamics of Amorphous Progesterone as Revealed by Brillouin Light Scattering", Materials, 2017, 10, 1426.
- Hien Duy Mai; Van Cam Thi Le; Thu Minh Thi Pham; Jae-Hyeon Ko; Hyojong Yoo\*, "Controllable Synthesis and Structural Analysis of Nanohybrids with Gold Multipod Nanoparticles Core and ZIF-67 Shell (GMN@ ZIF-67)", ChemNanoMat, 2017, 3, 857.
- Hien Duy Mai; Inme Lee; Sangdon Lee; Hyojong Yoo\*, "Alkali-Metal-Mediated Frameworks based on Di-(2,6-Pyridinedicarboxyate)cobalt(II) Species", European Journal of Inorganic Chemistry, 2017, 3736.
- Khezina Rafiq; Hien Duy Mai; Jin Kyung Kim; Jae Min Woo; Bo Mi Moon; Chan Hum Park; Hyojong Yoo\*, "Fabrication of a Highly Effective Electrochemical Urea Sensing Platform Based on Urease-Immobilized Silk Fibroin Scaffold and Aminated Glassy Carbon Electrode", Sensors and Actuators B: Chemical, 2017, 251, 472.
- WonGyun Byoun; Hyojong Yoo\*, "Peapod Assemblies of Au and Au/Pt Nanoparticles Encapsulated within Hollow Silica Nanotubes", ChemistrySelect, 2017, 2, 2414.
- Hien Duy Mai; Philjae Kang; Jin Kyung Kim; Hyojong Yoo\*, "A Cobalt Supramolecular Triple-Stranded Helicate-based Discrete Molecular Cage", Scientific Reports, 2017, 7, 43448. (Released in Press)
- Youngseo Moon; Hien Duy Mai; Hyojong Yoo\*, "Platinum Overgrowth on Gold Multipod Nanoparticles: Investigation of Synergetic Catalytic Effects in a Bimetallic Nanosystem", ChemNanoMat, 2017, 3, 196. (Cover Picture)
- Hien Duy Mai; Khezina Rafiq; Hyojong Yoo\*, "Nano Metal-Organic Framework-derived Inorganic Hybrid Nanomaterials: Synthetic Strategies and Applications" (Review Paper), Chemistry - A European Journal, 2017, 23, 5631.
- Soon Choi; Youngseo Moon; Hyojong Yoo\*, "Finely Tunable Fabrication and Catalytic Activities of Gold Multipod Nanoparticles", Journal of Colloid and Interface Science, 2016, 469, 269.
- Diana Kostyukova; Hyojong Yoo\*, "Facile Fabrication of Platinum Nanodots Assembly Core - Silica Shell Nanosystems", Journal of Electronic Materials, 2016, 45, 2361.
- Dong Wook Kim; Ok Joo Lee; Seong-Wan Kim; Chang Seok Ki; Janet Ren Chao; Hyojong Yoo; Sung-il Yoon; Jeong Eun Lee; Ye Ri Park; HaeYong Kweon; Kwang Gill Lee; David L. Kaplan; Chan Hum Park\*, "Novel Fabrication of Fluorescent Silk utilized in Biotechnological and Medical Applications", Biomaterials, 2015, 70, 48.
- Hien Duy Mai; Gun Yong Sung; Hyojong Yoo\* "Fabrication of nickel oxide nanostructures with high surface area and application for urease-based biosensor for urea detection", RSC Advances, 2015, 5, 78007.
- Hyojong Yoo\*; Jeonghee Lee; Philjae Kang; Moon-Gun Choi "Synthesis of Cobalt Cluster-

- based Supramolecular Triple-Stranded Helicates", Dalton Transactions, 2015. 44, 14213.
- Hien Duy Mai; Kiouk Seo; Soon Choi; Hyojong Yoo\* "High Catalytic Performance of Raspberry-Like Gold Nanoparticles and Enhancement of Stability by Silica Coating", RSC Advances, 2015, 5, 18977.
  - Jeonghee Lee; Philjae Kang; Moon-Gun Choi; Hyojong Yoo\* "Synthesis, Structure, and Ligand Exchange of a Copper(II)-based Molecular Helix with 2,6-Pyridinedicarboxylates", Journal of Coordination Chemistry, 2015, 68, 461.
  - Hyojong Yoo\*; Donald H. Berry, "Synthesis of Tridentate 2,6 - Bis(imino)pyridyl Ruthenium(II) Complexes with N - Heterocyclic Carbene Ligands: Activation of Imidazolium Salts", Inorganic Chemistry, 2014, 53, 11447.
  - Joonsung Pak; Hyojong Yoo\*, "Synthesis and Catalytic Performance of Multiple Gold Nanodots Core-Mesoporous Silica Shell Nanoparticles", Microporous and Mesoporous Materials, 2014, 185, 107.
  - Hyojong Yoo\*; Soon Choi, "Nonionic Surfactant-Assisted, Seed-Mediated Growth of Gold Nanotoroids", Journal of Nanoscience and Nanotechnology, 2014, 14, 5244.
  - Hyojong Yoo\*; Min Hoon Jang, "Size-Controlled Synthesis of Gold Bipyramids using an Aqueous Mixture of CTAC and Salicylate Anions as Soft Templates", Nanoscale, 2013, 5, 6708.
  - Joonsung Pak; Hyojong Yoo\*, "Facile Synthesis of Spherical Nanoparticles with a Silica Shell and Multiple Au Nanodots as the Core", Journal of Materials Chemistry A, 2013, 1, 5408.
  - Hyojong Yoo\*; Joonsung Pak, "Synthesis of Highly Fluorescent Silica Nanoparticles in a Reverse Microemulsion through Double-Layered Doping of Organic Fluorophores", Journal of Nanoparticle Research, 2013, 15, 1609.
  - Min Hoon Jang; Joonsung Pak; Hyojong Yoo\*, "Synthesis of Highly Emissive PIPES-Stabilized Gold Nanoclusters and Gold Nanocluster-Doped Silica Nanoparticles", Journal of Nanoscience and Nanotechnology, 2013, 13, 2922.
  - Hyojong Yoo; Mari S. Rosen; Aaron M. Brown; Michael J. Wiester; Charlotte L. Stern; Chad A. Mirkin\*, "Elucidating the Mechanism of the Halide-Induced Ligand Rearrangement Reaction", Inorganic Chemistry, 2012, 51, 11986.
  - Min Hoon Jang; Jin Kyung Kim; Hyojong Yoo\*, "Nonionic Brij Surfactant-Mediated Synthesis of Raspberry-Like Gold Nanoparticles with High Surface Area", Journal of Nanoscience and Nanotechnology, 2012, 12, 4088.
  - Jin Kyung Kim; Hyojong Yoo\*, "Synthesis and Structure of Tridentate 2,6-Bis(imino)pyridyl Ruthenium(II) Complexes with 2,3,6-Trimethyl Benzenamine Ligand", Journal of Structural Chemistry, 2012, 53, 347.
  - Min Hoon Jang; Jin Kyung Kim; Hyeongun Tak; Hyojong Yoo\*, "Controllable Synthesis of Multi-Layered Gold Spirangles", Journal of Materials Chemistry, 2011, 21, 17606.
  - Hyojong Yoo\*; Jaswinder Sharma; Jin Kyung Kim; Andrew P. Shreve; Jennifer S. Martinez\*, "Tailored microcrystal growth: A facile solution-phase synthesis of gold rings", Advanced Materials, 2011, 23, 4431.
  - Jin Kyung Kim; Donald H. Berry; Hyojong Yoo\*, "Synthesis of tridentate 2,6-bis(imino)pyridyl aminechlorohydro ruthenium(II) complexes; The Convenient Use of Amine Hydrochlorides to Generate Metal-Hydride", Journal of Organometallic Chemistry, 2011, 696, 1895.
  - Jaswinder Sharma; Hsin-Chih Yeh; Hyojong Yoo; James H. Werner; Jennifer S. Martinez\*, "Silver nanocluster aptamers: In situ generation of intrinsically fluorescent recognition ligands for protein detection", Chemical Communications, 2011, 47, 2294.
  - Hyojong Yoo; Jaswinder Sharma; Hsin-Chih Yeh; Jennifer S. Martinez\*, "Solution-phase synthesis of Au fibers using rod-shaped micelles as shape directing agents" Chemical

Communications, 2010, 46, 6813.

- Michael J. Wiester; Hyojong Yoo; Chad A. Mirkin\*, “Solvent and Temperature Induced Switching Between Structural Isomers of RhI Phosphinoalkyl Thioether (PS) Complexes” *Inorganic Chemistry*, 2010, 49, 7188.
- Jaswinder Sharma; Hsin-Chih Yeh; Hyojong Yoo; James H. Werner; Jennifer S. Martinez\*, “A Complementary Palette of Fluorescent Silver Nanoclusters” *Chemical Communications*, 2010, 46, 3280.
- Hsin-Chih Yeh; Jaswinder Sharma; Hyojong Yoo; Jennifer S. Martinez; James H. Werner\*, “Photophysical Characterization of Fluorescent Metal Nanoclusters Synthesized using Oligonucleotides, Protein, and Small Molecule Ligands” *SPIE Proceedings*, 2010, 7576, DOI: 10.1117/12.842192.
- Hyojong Yoo; Jill E. Millstone; Shuzhou Li; Jae-Won Jang; Wei Wei; Jinsong Wu; George C. Schatz\*; Chad A. Mirkin\*, “Core-Shell Triangular Bifrustums” *Nano Letters*, 2009, 9, 3038. (Highlighted in *C&EN Magazine*, 2009, 87, p31.
- Jill E. Millstone; Wei Wei; Matthew R. Jones; Hyojong Yoo; Chad A. Mirkin\*, “Iodide Ions Control Seed-Mediated Growth of Anisotropic Gold Nanoparticles” *Nano Letters*, 2008, 8, 2526.
- Hyojong Yoo; Chad A. Mirkin\*; Antonio G. DiPasquale; Arnold L. Rheingold; Charlotte L. Stern, “Reversible CO-Induced Chloride Shuttling in Rh(I) Tweezer Complexes Containing Urea Functionalized Hemilabile Ligands” *Inorganic Chemistry*, 2008, 47, 9727.
- Hyojong Yoo; Patrick J. Carroll; Donald H. Berry\*, “Synthesis and Structure of Ruthenium-Silylene Complexes: Activation of Si-Cl bond in N-Heterocyclic Silanes” *Journal of the American Chemical Society*, 2006, 128, 6038.
- Oh-Hoon Kwon; Hyojong Yoo; Du-Jeon Jang\*, “Photophysics of C60 and C60- in Faujasite Zeolites” *The European Physical Journal D*, 2002, 18, 69.
- Oh-Hoon Kwon; Hyojong Yoo; Kyuchan Park; Bo Tu; Ryong Ryoo; Du-Jeon Jang\*, “Anionic and Upper Excited Fluorescence of C60 Encapsulated in Y Zeolitic Nanocavity” *Journal of Physical Chemistry B*. 2001, 105, 4195.
- Hyunung Yu; Hyojong Yoo; Du-Jeon Jang\*, “Excited State Protonation and Deprotonation Reactions of 6-Hydroxyquinoline Adsorbed in Y Zeolite Supercages” *Bulletin of the Korean Chemical Society* 1997, 18, 131.

## 저서

- 노동윤; 이흥인; 이익모; 이동현; 김자현; 김승주; 윤호섭; 김영일; 유효종; 김종원; 명노승, “무기화학실험” 자유아카데미, 2014.
- Gregory S. Girolami; Alfred P. Sattelberger; Tarun K. Panda; Michael T. Gamer; Peter W. Roesky; Hyojong Yoo; Donald H. Berry, "Sodium and Potassium Cyclopentadienide", *Inorganic Syntheses*, 2014, 7, Volume 36 (eds G. S. Girolami and A. P. Sattelberger), John Wiley & Sons, Inc., Hoboken, New Jersey. doi: 10.1002/9781118744994.ch07.

## 국내외 학술발표

- Hyojong Yoo, “Multilevel Coordination-Driven Assemblies for Metallosupramolecules with Hierarchical Structures”, The 7th Asian Conference on Coordination Chemistry (ACCC7), Kuala Lumpur, Malaysia, 2019 (Keynote Lecture).
- Hyojong Yoo, “Fabrication and Application of Novel Nanohybrids with Coordination Polymer

- Framework Derivatives”, The 8th Asian Conference on Colloid & Interface Science (ACCIS), Kathmandu, Nepal, 2019 (Invited Lecture).
- Hyojong Yoo, “Synthesis and Application of Coordination-Driven Higher-Order Supramolecular Assemblies and Nanohybrids with Polymeric Framework Derivatives”, ChinaNANO 2019, Beijing, People’s Republic of China, 2019 (Invited Lecture).
  - Hyojong Yoo, “Fabrication and Application of Hollow Multi-Au@SiO<sub>2</sub> Nanosystems, and Nanohybrids with Coordination Polymer Framework Derivatives”, The 7th Asian Silicon Symposium, Singapore, 2019 (Invited Lecture).
  - Hyojong Yoo, "Multilevel Coordination-Driven Assembly of Cobalt Cluster-based Supramolecules with Hierarchical Architecture", International Conference on Coordination Chemistry, Sendai, Japan, 2018.
  - Hyojong Yoo, "Rational Design of Functional Supramolecular Triple-Stranded Helicates and Their Controllable Higher-Order Assemblies", The 10th International Symposium on Nano and Supramolecular Chemistry (ISNSC 2018), Dresden, Germany, 2018.
  - Hyojong Yoo, "Controllable Syntheses and Catalytic Activities of Gold Multipod Nanoparticles Core and Nano Metal-Organic Framework Derivatives Shell Nanohybrids", 8th International Colloids Conference, Shanghai, Republic of China, 2018.
  - Hyojong Yoo, "Finely Tunable Fabrication and Catalytic Activities of Metallic Nanoparticles-Silica Hybrid Nanomaterials", ISOS-18 and ASiS-6, Jinan, Republic of China (Invited Lecture), 2017.
  - Hyojong Yoo, "Soft-Templating Strategies for Anisotropic Au Nanomaterials and Hollow MultiAu@SiO<sub>2</sub> Nanosystems (Oral)", 2017 MRS Spring Meeting & Exhibit, Phoenix, Az, United States, 2017.
  - Hyojong Yoo, "Cobalt supramolecular triple-stranded helicate based discrete molecular cage (Oral)", 253rd ACS National Meeting, San Francisco, IL, United States, 2017.
  - Hyojong Yoo, "Soft-templating strategies for anisotropic Au nanomaterials and hollow multiAu@SiO<sub>2</sub> nanosystems (Poster)", 253rd ACS National Meeting, San Francisco, IL, United States, 2017.
  - Hyojong Yoo, "Facile Fabrication and Application of 1D- and Star-Shaped Hybrid Nanomaterials (Poster)", CINT Users Conference, Santa Fe, NM, United States, 2016.
  - Hyojong Yoo, “Facile Fabrication and Application of Functional Nano-Hybrid Materials”, International Workshop on Nanoscience and Nanotechnology: Opportunities for Academia & High Tech Industry Joint 4th Asia-Pacific Chemical and Biological Microfluidics Conference (IWNN-APCBM 2015), Da Nang, Vietnam, 2015 (Invited Talk)
  - Hyojong Yoo, “Facile Fabrication and Application of Anisotropic Nanoparticles”, IUPAC-2015, Busan, South Korea 2015.(Invited Talk)
  - Hyojong Yoo, “Synthesis and Coordination Polymerization of Cobalt Cluster-based Supramolecular Triple-Stranded Helicates”, 2015 International Conference on Nanospace Materials, Taipei, Taiwan, 2015.(Invited Talk)
  - Hyojong Yoo, “Tailored Synthesis and Application of Anisotropic Nanomaterials”, the 115th Annual Meeting of Korean Chemical Society (제115회 대한화학회 추계총회 및 학술발표회), Ilsan, South Korea, 2015.
  - Hien, Mai-Duy; Gun Yong Sung; Hyojong Yoo, "Facile Fabrication of Nickel Oxide Nanostructures and Its Application for Urease-based Biosensor for Urea Detection", 2015 MRS Spring Meeting & Exhibit, San Francisco, CA, United States, 2015.
  - Hien, Mai-Duy; Gun Yong Sung; Hyojong Yoo, "Fabrication of NiO Nanostructure and Urease-based Amperometric Biosensor for Urea Detection", The Korean MEMS Conference, Jeju,



South Korea, 2015.

- Hyojong Yoo, "Tailored Synthesis and Application of Anisotropic Nanoparticles", KSIEC Spring Meeting (한국공업화학회 춘계 총회 및 학술대회), Jeju, South Korea, 2014.
- Hyojong Yoo, "Spherical Nanoparticles with a Silica Shell and Gold Nanodots Assembly as the Core", the 112nd Annual Meeting of Korean Chemical Society (제112회 대한화학회 추계총회 및 학술발표회), Changwon, South Korea, 2013.
- Hyojong Yoo, "Spherical Nanoparticles with a Silica Shell and Gold Nanodots Assembly as the Core", the 2nd International Symposium on Applied Silicon Chemistry, Seoul, South Korea, 2013.
- Hyojong Yoo, "Facial Synthesis of Spherical Nanoparticles with a Porous Silica Shell and Multiple Au Nanodots as the Core", ChinaNANO 2013, Beijing, People's Republic of China, 2013.
- Hyojong Yoo, "Tailored Microcrystal Growth: A Facile Solution-Phase Synthesis of Anisotropic Gold Nanomaterials" the 108th annual meeting of Korean Chemical Society, Daejeon, 2011.
- Hyojong Yoo, "Solution-Phase Synthesis of Anisotropic Au Materials: Use of Surfactants as Shape-Directing Agents" the 106th annual meeting of Korean Chemical Society, Daegu, 2010.
- Hyojong Yoo, "Preparation of Anisotropic Au Materials: Use of Surfactants as Shape-Directing Agents" CINT Users Conference, Albuquerque, NM, United States, 2010.
- Hyojong Yoo; Jill E. Millstone; Jae-Won Jang; Wei Wei; Jinsong Wu; Shuzhou Li; George C. Schatz; Chad A. Mirkin, "Seed-Mediated Synthesis and Optical Characterization of Triangular Bimetallic Au/Ag Nanocrystals" 236th ACS National Meeting, Philadelphia, PA, United States, 2008.
- Noah L. Wieder; Noah S. Frank; Hyojong Yoo; Patrick J. Carroll; Donald H. Berry, "Activation of Silicon-Chloride Bonds with Ruthenium(0) Complexes and Reactivity of Chloro(organosilyl)ruthenium(II) Complexes with Acetylene" 40th Silicon Symposium, Victoria, BC, Canada, 2007.
- Hyojong Yoo; Chad A. Mirkin, "Tuning the Structural and Anion Recognition Properties of Urea Functionalized Rh(I) and Cu(I) Tweezers via the Weak Link Approach" Japan-USA Joint Symposium on Chemistry of Coordination Space, Northwestern University, United States, 2007.
- Hyojong Yoo; Michelle Gallagher; Donald H. Berry, "Activation of Silicon-Chloride Bond as a Route to Silyls, Silylenes, and Alkene Silylation" The 14th International Symposium on Organosilicon Chemistry, ISOSXIV, University of Wurzburg, Germany, 2005.
- Hyojong Yoo; Patrick J. Carroll; Donald H. Berry, "Oxidative Addition of Silicon Chloride Bonds to Ruthenium(0) Complexes: Synthesis, Characterization, and Reactivity of the Chloro(organosilyl)ruthenium(II) Species" 230th ACS National Meeting, Washington, DC, United States, 2005.
- Hyojong Yoo; Patrick J. Carroll; Donald H. Berry, "Synthesis and Structure of Ruthenium-Silylene Complexes: Two-Step Activation of N-Heterocyclic Silanes" 37th Silicon Symposium, University of Pennsylvania, PA, United States, 2004.
- Hyojong Yoo; Patrick J. Carroll; Donald H. Berry, "Synthesis and Structure of Ruthenium-Silylene Complexes: Two-Step Activation of N-Heterocyclic Silanes" 227th ACS National Meeting, Anaheim, CA, United States, 2004.
- Oh-Hoon Kwon; Hyojong Yoo; Kyuchan Park; Du-Jeon Jang, "Anionic and Upper-Excited Fluorescence of C60 Encapsulated in Y Zeolitic Nanocavity" 222nd ACS National Meeting, Chicago, IL, United States, 2001.
- Hyojong Yoo; Du-Jeon Jang, "Intercalation and Optical Characterization of C60 in Zeolite

Cages”, the 79th annual meeting of Korean Chemical Society, Seoul, 1997.

- Hyunung Yu; Hyojong Yoo; Du-Jeon Jang, “Proton Transfer Cycle of 6-Hydroxyquinoline in Zeolite Cages”, Asian photochemistry conference at the Hong Kong university of science and technology, Hong Kong, 1996.

## 언론활동

### 대외언론

- <이뉴스투데이> 2019.03.01 한림대 유효종 교수 연구팀, '무기 거대분자의 체계적 이해를 위한 단계적 조합 이론' 발표
- <대학저널> 2018.03.05 한림대 김형수·유효종 교수, 제12회 일송상 수상
- <연합뉴스> 2017.03.07 한림대 유효종 교수팀, 단계적 조합으로 '슈퍼초분자' 합성
- <연합뉴스> 2017.03.17 한림대 유효종 교수팀 연구물, 국제 저널 표지 선정