

유기 합성 연구실

Organic Synthesis
Laboratory



정원진

교수

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Education

2008 Ph.D. in Chemistry, University of Illinois at Urbana-Champaign

2002 B.S. in Chemistry, KAIST

Experience

2021 ~ Associate Professor, Department of Chemistry, GIST

2014 ~ 2021 Assistant Professor, Department of Chemistry, GIST

2011 ~ 2014 Postdoctoral Associate at University of California, Irvine

2008 ~ 2011 Research Scientist at LG Chem Research Park, Daejeon

연구실 소개

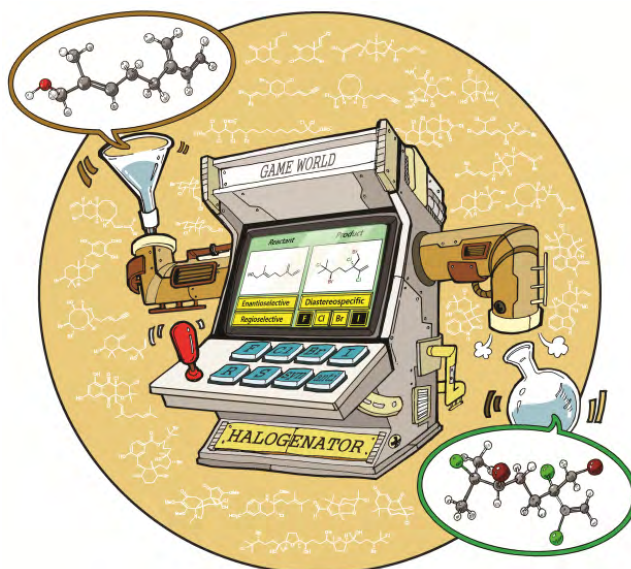
유기합성연구실에서는 새로운 반응성과 메커니즘을 탐구하며 독창적인 유기합성법을 개발하고 있다.

I. 연구목적 (Research Objectives)

1. Development of novel catalytic stereoselective synthetic methods
2. Investigation of unprecedented reaction mechanisms
3. Application to total synthesis of complex natural products

II. 연구주제 (Research Projects)

1. Orbital symmetry-controlled stereoselective thiirane synthesis
2. Nontraditional syn-dihalogenation of alkenes
3. Geminal halofunctionalization via the Kuhktin-Ramirez reaction
4. Convenient diboron reagent-mediated ketyl- π coupling
5. Mechanistically driven stereoselective bromofluoroolefination
6. Rarely explored, halogenative ring contraction of 1,2-diazines
7. Total synthesis of halogenated natural products



연구 성과

수행중인 주요 연구과제 (주요과제경력)

- *syn*-Dihalogenation of Alkenes (한국도레이과학진흥재단 펠로십)
- Chiral Organofluorine Synthesis (한국연구재단 중견연구 지원사업)
- Geminal Aminofluorination (한국연구재단 기본연구 지원사업)
- Enantioselective Geminal Cyclofunctionalization (한국연구재단 기본연구 지원사업)
- *syn*-Difunctionalization of Alkenes (한국연구재단 신진연구자 지원사업)
- Stereoselective Alkene Synthesis (삼성미래기술육성재단 기초과학 지원사업)

주요논문 (대표실적)

- Relayed Heteroatom Group Transfer, *Org. Lett.* **2023**, 25, 9076-9081.
- Three Different Heteroatoms at a Tetrasubstituted Carbon, *Org. Lett.* **2023**, 25, 8839-8844.
- Reaction Prediction by Machine Learning, *Helv. Chim. Acta* **2023**, 106, e202300165.
- Stereochemical Modulation of Ketyl Radical Cyclization, *Chem. Commun.* **2023**, 59, 11983-11986.
- *cis*-Thiirane Synthesis, *Nat. Commun.* **2022**, 13, 4818.
- Geminal Azidofluoride Rearrangement, *Org. Lett.* **2021**, 23, 8810-8815.
- Pyridine-Boryl Radical-Mediated Pinacol Coupling, *Chem. Commun.* **2021**, 57, 1360-1363.
- Tandem Deoxygenative Geminal Chlorofluorination, *Org. Lett.* **2020**, 22, 4190-4195.

주요연구시설



React IR



GC-MS



SFC

융합연구 및 비전

반응성, 선택성 메커니즘 규명

계산화학

인공지능 활용
유기반응 개발

기계학습

전자스핀상태 제어,
유기반응 조절

양자화학