응용 환경 미생물 연구실

Applied & Environmental Microbiology Laboratory

허호길
교수

hghur@gist.ac.kr

062-715-2437

https://env1.gist.ac.kr/aeml/index.do

학위사항

1997	Ph.D. Soil Microbiology, University of Minnesota
1989	M.S. in Dept. Agricultural Chemistry, Seoul National Univ.
1987	B.S. in Dept. Agricultural Chemistry, Seoul National Univ.

주요경력

2017.01 ~ 2019.03	Vice-President, GIST
2002 ~	Professor, School of Earth Sciences and Environmental Engineering, GIST
2012 ~ 2015	Dean of the Office of Planning and Budget, GIST
2011 ~ 2012	Director of International Environmental Analysis and Education Institute

학회활동 및 수상실적 등

Editorial Board Member for Applied and Environmental Microbiology (ASM, USA),

2007 국가연구개발 100 대 우수성과 / 교육과학기술부

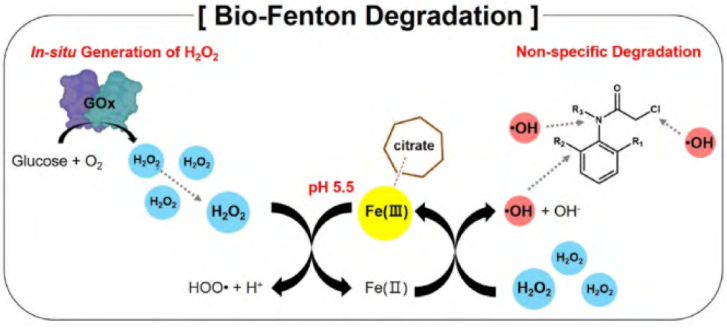
2011 기창상, 한국응용생명화학회

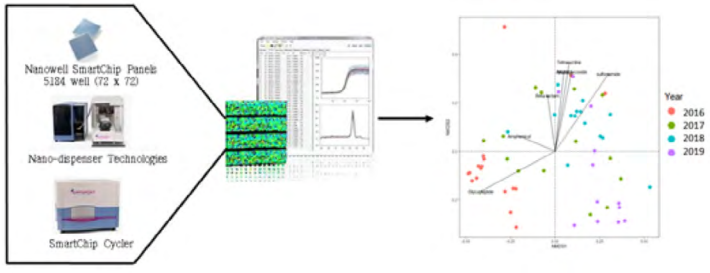
'2018 한국응용생명화학 부회장'

'2011 Ministerial Citation for Exellent Researcher, National Science and Technology Commission'

연구실 소개

오랜 세월 동안 지구환경에 적응해온 미생물은 다양한 대사과정들을 습득하고 진화시켜 왔으며, 이러한 대사 다양성은 지구환경의 지속적 순환에 필수적입니다. 현재 응용환경미생물 연구실에서는 세부적으로 미생물 유래 과산화수소를 이용한 BioFenton 시스템을 통해 난분해성 유기오염물질 및 플라스틱 분해 연구를 수행 중에 있으며, 수생태 내 항생제 내성 및 병원성 미생물의 거동 분자생물학적 방법에 의한 병원성 미생물 추적 system 개발에 관한 연구들을 진행하고 있습니다.





연구 성과

수행중인 주요 연구과제 (주요과제경력)

- 농업환경 항생제 위해성평가 시스템 구축 기술 개발 (2021/01/01 - 2023/12/31, 농촌진흥청)
- 미생물 활용 농업 폐플라스틱 분해 기술 개발 (2021/04/01 - 2024/12/31, 농촌진흥청)
- 도시형 생활폐기물 가스화 물질 혁신적 전환 선도연구센터 (2021/06/01 - 2028/02/29, 선도연구센터사업)
- Bacterial Bio-Fenton 시스템 개발에 의한 난분해성 환경오염물질의 비선택적 분해 (2023/03/01 ~ 2028/02/29, 한국연구재단)

주요논문 (대표실적)

- Prevalence and Characterization of CRISPR Loci 2.1 Spacers in Escherichia coli Isolates Obtained from Feces of Animals and Humans
  Author : Hanseob Shin, Yongjin Kim, Tatsuya Unno, and **Hor-Gil Hur***
  Source: Microbiology Spectrum
  Year: 2023
- Non-specific degradation of chloroacetanilide herbicides by glucose oxidase supported Bio-Fenton reaction
  Author : Youri Yang, Sunil Ghatge, Yongseok Ko, Younggun Yoon, Jae-Hyung Ahn, Jeong Jun Kim, and **Hor-Gil Hur***
  Source: Chemosphere
  Year: 2022
- Degradation of sulfonated polyethylene by a bio-photo-fenton approach using glucose oxidase immobilized on titanium dioxide
  Author : Sunil Ghatge, Youri Yang, Yongseok Ko, Younggun Yoon, Jae-Hyung Ahn, Jeong Jun Kim, and **Hor-Gil Hur***
  Source: Journal of Hazardous Materials
  Year: 2021
- Biogenic Hematite from Bacteria: Secondary Nanoclusters for a High and Stable Lithium Storage Capacity
  Author : Tae-Yang Kim, Sunhwa Park, Younggun Yoon, Ji-Hoon Lee, Jeongsuk Jeon, Mi Sug Kim, Yoojin Kim, Min Gyu Kim*, and **Hor-Gil Hur***
  Source: Applied Materials & Interfaces
  Year: 2019
- Adsorption and Incorporation of Arsenic to Biogenic Lepidocrocite Formed in the Presence of Ferrous Iron during Denitrification by Paracoccus denitrificans
  Author : Sunhwa Park, Ji-Hoon Lee, Tae Joo Shin, **Hor-Gil Hur***, and Min Gyu Kim*
  Source: Environmental Science & Technology
  Year: 2018
- Biogenic Realgar As4S4 Molecular Cluster Formed by One-pot Microbial-driven Process as a Li-ion Storage Material
  Author : Tae-Yang Kim, Hyungju Ahn, Jeongsuk Jeon, Mi Sug Kim, Min Gyu Kim*, and **Hor-Gil Hur***
  Source: Advanced Sustainable Systems
  Year: 2017
- Season-specific Occurrence of Potentially Pathogenic Vibrio spp. on the Southern Coast of South Korea
  Author : Doris Y. W. Di, Anna Lee, Jeonghwan Jang, Dukki Han, and **Hor-Gil Hur***
  Source: Applied and Environmental Microbiology
  Year: 2017
- Biogenic formation of photoactive arsenic-sulfide nanotubes by Shewanella sp. strain HN-41
  Author : Ji-Hoon Lee, Min-Gyu Kim, Bongyoung Yoo, Nosang V. Myung, Jongsun Maeng, Takhee Lee, Alice C. Dohnalkova, James K. Fredrickson, Michael J. Sadowsky, and **Hor-Gil Hur***
  Source: Proceedings of the National Academy of Science (*Selected as Editor's Choice/Introduced in Nature Nanotechnlogy (2008) and Scientific America (2008))
  Year: 2007
- Metaboilsm of polychlorinated compounds by a genetically engineered bacterium
  Author : Lawrence P. Wackett*, Michael J. Sadowsky, Lisa M. Newman, **Hor-Gil Hur**, and Shuying Li
  Source: Nature
  Year: 1994

주요특허

- Biological production method of photoconductive arsenic-sulfide (As-S) nanotube and strain used for the same (USA)
- Method for preparing pterocarpan (USA)
- Method for manufacturing a gold core/insulator shell nanostructure using a novel peptide (USA)

주요연구시설

- High Performance Liquid Chromatography Gas Chromatography Polymerase Chain Reaction, qPCR NanoDrop, Anaerobic Chamber, Furnace, UV Spectrometer, Incubator, Autoclave