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Education

Ph.D. Inorganic Chemistry, University of Houston, Houston, USA,
M. S. Organometallics & Inorganic Chemistry, Yonsei University, Seoul, Korea

Teaching Experience

Assistant Professor (01/2020--Current): Department of Biology, Geology & Physical Sciences

- Teaching general chemistry: CHEM1311& CHEM1312
- Teaching advanced chemistry: Inorganic Chemistry (CHEM2402)
Organic Chemistry (CHEM3407)
Reading & Research (CHEM4311MC)

Adjunct Professor (01/2019--05/2019): Department of Biology, University of Houston Victoria,

- Teaching inorganic chemistry classes for biology major students

Chemistry Instructor (01/2016--12/2019): Department of Chemistry, HCC

- Teaching general chemistry (CHEM1305, CHEM1411 & CHEM1412)

Research Experience

Postdoctoral Scholar (09/2012--09/2014): Washington State University, Institute for Shock Physics

Postdoctoral Scholar (05/2010--04/2011): University of Texas at Austin, Texas Material Institute

Postdoctoral Scholar (09/2009--04/2010): University of Houston, Department of Chemistry

Research Interest

- Synthesis and characterization of Polyoxometalates (POMs) and their biological applications
- Synthesis and structural determination of new non-centrosymmetric (NCS) materials for nonlinear optic (NLO) technology, Ferroelectric & Pyroelectric properties, and Piezoelectricity
- Synthesis and characterization of new multi-ferroic fluoride materials with big size crystal growth
- Synthesis and development of lithium-ion battery cathode materials for their higher capacities

Selected Publications & Patent

1. H. S. Ahn, E. P. Lee, **H. Y. Chang**, D. W. Lee, K. M. Ok “ Sr₃Bi₂(SeO₃)₆H₂O A Novel Anionic Layer consisting of Second-Order Jahn-Teller (SOJT) Distortive Cations” *J. Solid. State. Chem.* (2015), 221, 73-78

2. E. S. Lee, A. Huq, **H. Y. Chang**, A. Manthiram “High-Voltage, High-Energy Layered-Spinel Composite Cathodes with Superior Cycle Life for Lithium-ion Batteries” *Chem. Mater.* (2012), 24(3), 600-612
3. S. W. Kim, **H. Y. Chang**, P. S. Halasyamani “Selective Pure-Phase Synthesis of the Multiferroic BaMF₄ (M = Mg, Mn, Co, Ni, and Zn) Family” *J. Am. Chem. Soc.* (2010), 132(50), 17684-17685
4. P. S. Halasyamani, **H. Y. Chang** “Ferroelectric Fluoride Compositions and Methods of Making and Using Same” US Patent No. 8,999,189; April 7, 2015

Poster Presentation

- ACS Regional Meeting (SWRM 2021), Nov. 2nd, Texas, Austin
“Asymmetric and Chiral Properties on *Strandberg* type-Polyoxometalates (POMs): Synthesis, Characterization, and Electronic Structure Calculation.”

Research Grant

- Welch Foundation Undergraduate Research Program (May 2021 to April 2023)
- ACSPRF (American Chemical Society Petroleum Research Fund) Grant (PRF # 65115-UNI3) (January 2022 to August 2024)
“Develop chemical insight for the rational design of new chiral polyoxometalate (POM) clusters based on the *Strandberg* polyoxoanion”