Laboratory for Structural Research




Head

Janusz Zachara

Staff

Izabela Madura
Andrzej Ostrowski
Maciej Dranka
Piotr Guńka

Current PhD students

Piotr Guńka
Karolina Czerwińska
Michał Hapka

Former PhD students

Monika Mazur

Current research

- Structural chemistry of lithium, sodium and magnesium salts and electrolytes for the use in rechargeable batteries
- The hierarchy of intermolecular interactions in crystal structures of boronic acids, their derivatives and co-crystals
- Structural, electronic and energetic studies of arsenic(III) oxide polymorphs and intercalates
- Structural studies of organometallic compounds containing main-group and transition metals
- Development of bond-valence vector model

Selected publications

Zachara J., *Novel Approach to the Concept of Bond-Valence Vectors*, Inorganic Chemistry, 46(23), 9760, 2007

Lesiuk M., Balawender R., Zachara J., *Higher Order Alchemical Derivatives from Coupled Perturbed Self-Consistent Field Theory*, Journal of Chemical Physic, 136, 034104, 2012

Guńka P.A., Dranka M., Piechota J., Żukowska G.Z., Zalewska A., Zachara J., *As_2O_3 Polymorphs: Theoretical Insight into Their Stability and Ammonia Templated Claudetite II Crystallization*, Crystal Growth & Design, 12, 5663, 2012

Plewa-Marczewska A., Trzeciak T., Bitner A., Niedzicki L., Dranka M., Żukowska G.Z., Marcinek M., Wieczorek W., *New Tailored Sodium Salts for Battery Applications*, Chemistry of Materials, 26, 4908, 2014

Madura I.D., Czerwińska K., Jakubczyk M., Pawełko A., Adamczyk-Woźniak A., Sporzyński A., *Weak C–H•••O and Dipole–Dipole Interactions as Driving Forces in Crystals of Fluorosubstituted Phenylboronic Catechol Esters*, Crystal Growth & Design, 13, 5344, 2013

Kozłowska A., Dranka M., Zachara J., Pump E., Slugovc C., Skowerski K., Grela K., *Chelating Ruthenium Phenolate Complexes: Synthesis, General Catalytic Activity, and Applications in Olefin Metathesis Polymerization,* Chemistry: A European Journal, 20, 14120, 2014

phone: (0048) 22 234 72 72 | e-mail: janzac@ch.pw.edu.pl | www.ch.pw.edu.pl/~janzac
Old Chemistry Building, 00-664 Warsaw, Noakowskiego Street, 3 | rooms: 109-119

Research profile

Structural chemistry
Inorganic chemistry
Crystal engineering
Periodic quantum mechanical computations
Single crystal X-ray diffraction
Powder diffraction
Rietveld analysis

Collaboration

Center for Advanced Radiation Sources, The University of Chicago (USA) – Yu-Sheng Chen

Faculty of Chemistry, Adam Mickiewicz University (Poland) – Andrzej Katrusiak

Organometallic Synthesis Laboratory, Faculty of Chemistry, University of Warsaw (Poland) – Andrzej Katrusiak,

Faculty of Chemistry, Rzeszow University of Technology (Poland) – Jan Kalembkiewicz

Research equipment

- Gemini A Ultra X-ray Diffraction System from Agilent Technologies
- Seifert HZG-4 Diffractometer for powder diffraction measurements
- High Pressure and High Temperature Equipment