Laboratory of Electronically Active Organic Materials




Head

Adam Proń

Staff

Irena Kulszewicz-Bajer
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Adam Proń
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Current PhD students

Grzegorz Gąbka
Kamil Kotwica
Ewa Kurach
Renata Rybakiewicz
Łukasz Skórka
Monika Góra

Former PhD students

Krzysztof Bieńkowski
Katarzyna Buga
Paweł Gawryś
Rafał Pokrop
Izabela Różalska

Current research

- Synthesis of low and high molecular weight organic semiconductors and metals
- Synthesis of high spin organic compounds
- Preparation of inorganic semiconductors nanocrystals and their hybrids with organic semiconductors and metals
- Structural, spectroscopic, magnetic, electronic and electrochemical characterization of the obtained materials
- Development of "all organic" or hybrid (organic/inorganic) field effect transistor, light emitting diodes, photodiodes and photovolatic cells

Selected publications

Kulszewicz-Bajer I., Louarn G., Djurado D., Skorka L., Szymanski M., Mevellec J. Y., Rols S., Pron A., *Vibrational Dynamics in Dendritic Oligoarylamines by Raman Spectroscopy and Incoherent Inelastic Neutron Scattering*, Journal of Physical Chemistry B, 118 (19), 5278, 2014

Maurel V., Skorka L., Onofrio N., Szewczyk E., Djurado D., Dubois L., Mouesca J. M., Kulszewicz-Bajer I., *Ferromagnetic Spin Coupling Through the 3,4'-Biphenyl Moiety in Arylamine Oligomers – Experimental and Computational Study*, Journal of Physical Chemistry B, 118 (27), 7657, 2014

Gąbka G., Bujak P., Giedyk K., Ostrowski A., Malinowska K., Herbich J., Golec B., Wielgus I., Pron A., *A Simple Route to Alloyed Quaternary Nanocrystals Ag–In–Zn–S with Shape and Size Control*, Inorganic Chemistry, 53, 5002, 2014

Bujak P., Kulszewicz-Bajer I., Zagorska M., Maurel V., Wielgus I., Pron A., *Polymers for Electronics and Spintronics*, Chemical Society Reviews, 42, 8895, 2013

Kurach E., Kotwica K., Zapala J., Knor M., Nowakowski R., Djurado D., Toman P., Pfleger J., Zagorska M., Pron A., *Semiconducting Alkyl Derivatives of 2,5-Bis(2,2'-Bithiophene-5-yl)- 1,3,4-Thiadiazole. Effect of the Substituent Position on the Spectroscopic, Electrochemical and Structural Properties*, Journal of Physical Chemistry C, 117, 15316, 2013

Pron A., Reghu R. R., Rybakiewicz R., Cybulski H., Djurado D., Grazulevicius J. V., Zagorska M., Kulszewicz-Bajer I., Verilhac J. M., *Triarylamine Substituted Arylene Bisimides as Solution Processable Organic Semiconductors for Field Effect Transistors. Effect of Substituent Position on Their Spectroscopic, Electrochemical, Structural and Electrical Transport Properties*, Journal of Physical Chemistry C, 115, 15008, 2011

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Research profile

Design and synthesis of organic semiconductors

Design and synthesis of organic ferromagnets

Inorganic nanocrystals synthesis and functionalization

Organic electrochemistry and spectroelectrochemistry

Magnetic studies of high spin materials

Fabrication of test organic electronic devices

Collaboration

Atomic Energy Commision, Grenoble (France) – David Djurado

University of Nantes (France) – Guy Louarn and Serge Lefrant

Lodz University of Technology (Poland) – Jacek Ulański

Institute of Physical Chemistry, Polish Academy of Sciences (Poland) – Robert Nowakowski

Scientific Awards

- Prize of the Foundation for Polish Science 2002 – Adam Proń
- Zawidzki Medal of the Polish Chemical Society 2011 – Adam Proń

Research equipment

- Spectrophotometer Cary 5000
- 2 potentiostats