

# **SEMINARIUM Z MAGNETYZMU I NADPRZEWODNICTWA**

Uprzejmie zawiadamiamy, że w **środę**  
**27 lutego 2013 r., o godz. 10:00**  
w sali 203 (bud. 1) odbędzie się seminarium, na którym

**Prof. Elena Aksimentyeva**

*Ivan Franko National University of Lviv, Ukraine*

wyłosi referat na temat:

## **HYBRID NANOSYSTEMS BASED ON CONDUCTING POLYMERS AND INORGANIC SEMICONDUCTORS**

Nanostructures based on inorganic and organic semiconductors have attracted a great attention due to the prospect of using of such structures in the solar cells, light emitting diodes, sensors, and memory devices. Special place is occupied by heterogeneous systems based on semiconductors with spatially-inhomogeneous structure (layered, porous, dispersive, etc.) and conducting polymers. In the present work an effect of the synthesis conditions on the structure and physical properties of the nanocomposites based on layered crystals of gallium selenide (GaSe), nanoporous silicon (PS), nanocrystals of barium zirconate ( $\text{BaZrO}_3$ ) with conjugated polymers of different types have been studied. For fabrication of these composites the methods of intercalation, self-assembling, oxidative and electrochemical polymerization have been developed. Obtained hybrid nanosystems were studied by FT-IR spectroscopy, XPD analysis, AFM and electron microscopy, tested on conductivity, photo- and cathode luminescence (CL).

From the data of X-ray diffraction, specific conductivity and luminescence spectra, the formation of nanostructure for polyaniline-GaSe (8 - 25 %) composites was confirmed. It has found that intensity of CL for hybrid layer significantly increases as compared with CL for PS without polymer. Polystyrene significantly alters the subsurface structure of  $\text{BaZrO}_3$  due to formation of hybrid nanosystem leading to modification of CL spectrum. Observed phenomena are explained by structure investigations.

Serdecznie zapraszamy

Roman Puźniak  
Henryk Szymczak  
Andrzej Wiśniewski