

## Superconductivity Research and Development in the Ukraine

Tatiana A. Prikhna<sup>1</sup>, Alexander A. Kordyuk<sup>2</sup>, and Vladimir E. Shaternik<sup>2</sup>

<sup>1</sup>Institute for Superhard Materials of the National Academy of Sciences of Ukraine,  
2 Avtozavodskaya Street, Kiev, 04074, Ukraine

<sup>2</sup>Institute of Metal Physics of the National Academy of Sciences of Ukraine,  
36 Vernadskiy Avenue, Kiev, 03680, Ukraine

Emails: [prikhna@mail.ru](mailto:prikhna@mail.ru), [kordyuk@gmail.com](mailto:kordyuk@gmail.com), [shaternik@mail.ru](mailto:shaternik@mail.ru)

**Abstract** - Overview of superconductivity R&D activities in the Ukraine, with contributions from: *Mikhail A. Belogolovskii on a proximity-effect theory for an inhomogeneous superconductor, Nickolay Cherpak on the experimental study of microwave impedance response of superconducting BaFeCoAs and FeSeTe composites, Alexander M. Gabovich on calculations of the stationary Josephson tunnel current for junctions made of superconductors partially gapped by biaxial or unidirectional charge density waves (CDW) and possessing a superconducting order parameter of d-wave symmetry, Alexander A. Kordyuk on correlation of electronic band structure with superconductivity in iron based superconductors, and Tatiana A. Prikhna on the distribution of nanostructural inhomogeneities acting as pinning centers in MgB<sub>2</sub> materials and thus affecting their critical current density.*

**Keywords** - *Ukrainian superconductivity research, proximity effect, inhomogeneous superconductor, microwave impedance, iron-based superconductor, BaFe,CoAs, FeSeTe, tunneling current, charge density wave, band structure, bulk MgB<sub>2</sub>, pinning in MgB<sub>2</sub>*