

O. A. KHAZIEIEVA

Graphene Dispersions by a Facile Mechanochemical Approach

*L. V. Pizarzhevsky Institute of Physical Chemistry of the National Academy of Sciences Ukraine
E-mail: khazeevaa@gmail.com*

The possibility of graphene production by dry mechanochemical treatment of graphite in the presence of chemically inert dispersant and subsequent liquid exfoliation of the prepared nanostructured graphite materials to graphene was shown. Inorganic salts (NaCl, KCl, KBr, Na₂SO₄, CaCO₃, MgSO₄, etc.), which have suitable crystal hardness and solubility, were used as the dispersants.

It was established that the nature of the dispersant, hardness in particular, could significantly affect the number of defects in the structure of prepared graphenes and their ability to form stable dispersions in various solvents. All used dispersants allowed to prepare graphene dispersions in N-methyl-2-pyrrolidone (NMP) and dimethylformamide (DMF), and the processing of graphite in the presence of some salts led to obtaining of stable graphene dispersions in such untypical solvents as ethanol and water.

It was found that Na₂SO₄ was the most versatile dispersant among the used inorganic salts as it allowed to prepare stable graphene dispersions in NMP, DMF, ethanol as well as in water.