

Recent development of microwave technology caused increased demand on electromagnetic (EM) radiation shielding materials. Absorption of microwave radiation is now mainly used in “stealth” technology i.e. for preparation shields that have ability to absorb radar waves.

Absorbing materials can be divided into two groups. The first one is related to the lossy polar dielectric substances, in which EM radiation causes polarization of molecules or their parts, which in consequence leads to the conversion of wave energy into heat. Second type of materials are magnetic compounds, in which EM wave induces movements of walls of magnetic domains and is finally dissipated as heat. In order to prepare best absorbing material, lossy dielectric and magnetic compounds are used together to create composites.

In present project, new technology of coaxial electrospinning will enable to create core-shell nanofibers, where core will be formed by lossy dielectric or magnetic materials. Possibly lossy polymers that are resistant for environmental conditions will be used as coatings of core molecules. It will ensure protection of core materials from corrosion or dissolution. Due to the application of nanotechnology in the field of EM absorbers, materials with outstanding absorption parameters can be fabricated.