Graphene oxide-based stimuli-responsive smart fluids

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Graphene oxide (GO) has been spotlighted as an electro-responsive (ER) material because of its high polarizability, outstanding dispersion stability and adequate electrical conductivity. Since the geometrical features, such as shape and size, affect the ER performances, it is necessary to control the structures of ER materials. GO sheets with controlled size and shape are developed through a ball-milling process. In addition, to investigate the ER activities of GO in a zero- or one-dimensional configurations, GO sheets are introduced onto the surface of silica nanoparticles with controlled porosities. Moreover, by wrapping the Fe_3O_4/SiO_2 core/shell nanoparticles with GO nanosheets, the dual stimuli-responsive material is developed.

Acknowledgement: This work was supported by the National Research Foundation of Korea(NRF) grant funded by the Korea government(MSIT) (No. 2019R1C1C1007578) and the Technology Innovation Program (20004627) funded By the Ministry of Trade, Industry & Energy(MOTIE, Korea).