## Magnetic centers in functionalized graphene

<u>L. Majchrzycki</u>,<br/>  $^{1,\,2}$  M.A. Augustyniak-Jabłokow,<br/>  $^3$  R. Strzelczyk,<br/>  $^{3,\,4}$  and M. Maćkowiak^ $^3$ 

<sup>1</sup>Institute of Physics, Poznan University of Technology, Nieszawska 13a, 60-965 Poznan; Poland <sup>2</sup>Wielkopolska Centre of Advanced Technology, Adam Mickiewicz University, Grunwaldzka Str. 6, 60-780 Poznan, Poland <sup>3</sup>Institute of Molecular Physics of PAS, Smoluchowskiego Str. 17, 60-179 Poznan, Poland <sup>4</sup>NanoBioMedical Centre, Adam Mickiewicz University, Umultowska Str. 8, 61-614 Poznan, Poland

We study magnetic properties of variously functionalized graphene. The attached functional groups or adatoms can be treated as defects perturbing the periodicity of the crystal field potential and introducing  $sp^3$  hybridization. Paramagnetic centers appearing in such materials can be due to functional groups or local instabilities of the electronic structure of graphene. In this report we analyze ESR and FMR signals observed in graphene oxide (GO), hydrazine reduced GO, GO reduced thermally in air and in paraffin and lithium doped reduced graphene oxide. For an explanation of the origin of these signals we analyze the temperature dependence of parameters characterizing the investigated spectrum and take into account the specific nature of functionalization of each material.