**Sensor properties of low-temperature reduced Graphene Oxide**

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Graphene oxide (GO) and reduced graphene oxide (rGO) are promised materials for optical, sensor, electronic and many others applications, not only because of their properties but also due to relatively simple obtaining technology.

This work dedicated to the investigation of sensor properties of the thermally reduced graphene oxide (GO) on both micro and macro level.

In order to study sensor properties two types of samples was performed: individual GO flakes on Ni for the Kelvin Probe Force Microscopy (KPFM) measurements and GO films on comb contacts (channel length in range 2-12 µm) obtained with ultrasonic sputtering for the conductivity measurements. GO reduction was performed with annealing (up to 230°C) in ambient atmosphere.

KPFM was used in order to find optimal reduced state [1] and for investigation of the surface potential vs. different atmosphere conditions. Electrical measurements have demonstrated that different kinds of molecules (ketone, alcohol, etc.) modulate conductivity of material in different ways (in some cases, irreversibly).

[1] Slobodian, O. M., Lytvyn, P. M., Nikolenko, A. S., Naseka, V. M., Khyzhun, O. Y., Vasin, A. V., Nazarov, A. N. (2018). Low-Temperature Reduction of Graphene Oxide: Electrical Conductance and Scanning Kelvin Probe Force Microscopy. *Nanoscale Research Letters,* *13*(1). doi:10.1186/s11671-018-2536-z