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Supporting Information

Synthesis, characterization, structural, optical properties and catalytic activity of reduced graphene oxide/copper nanocomposites

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The influence of Cu₂O or CuO on the optical properties of RGO/Cu NPs

For more analysis, we simulated the absorbance spectra for RGO/CuO, RGO/Cu₂O and a mixture of Cu (Cu, CuO and Cu₂O) NPs phases on RGO. In our simulation, the volume fraction of CuO, Cu₂O and a mixture of Cu NPs phases respectively $f_{CuO} = 0.00002$, $f_{Cu_2O} = 0.00006$, $f_{M-Cu} = 0.0001$ were fixed. The optical refractive index (OPI) for CuO and Cu₂O extracted from reference 1 and also refractive index for mixture Cu NPs considered as $f_{Cu} * (OPI-Cu) + f_{CuO} * (OPI-CuO) + f_{Cu_2O} * (OPI-Cu_2O)$. All absorbance spectra are depicted in Figure 1. It can be observed that optical absorbance spectra for Cu oxidized phases and mixture phase were supported on RGO almost are same as RGO/Cu NPs spectra. Then oxidized Cu NPs at lower volume fractions do not affect on optical band gap that extracted only from RGO/Cu NPs spectra. Therefore, the optical absorbance is most influenced by Cu NPs in our work.

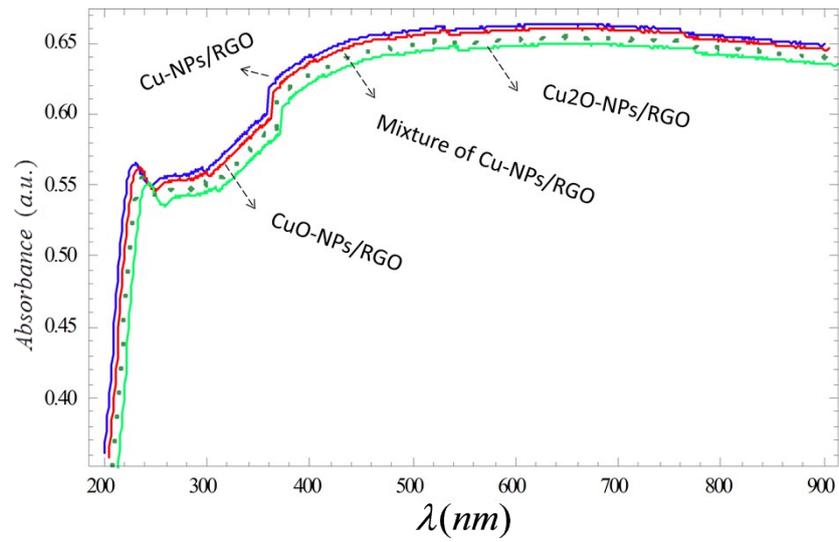


Figure 1. Calculated absorbance spectra for Cu, CuO, Cu₂O and a mixture of Cu NPs on RGO.

References:

1 <http://www.ioffe.ru/SVA/NSM/nk/>.