

CVD graphene sheets electrochemically  
decorated with “core-shell” Co/CoO  
nanoparticles

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**Abstract.** The paper reports on the first successful fabrication of Co-graphene composites by electrochemical deposition of Co nanoparticles (NPs) on the sheets of twisted graphene. Characterization of the surface morphology and element mapping of twisted graphene decorated with Co NPs by transmission and scanning electron microscopy in

combination with the energy-dispersive X-ray spectroscopy reveals the formation of isolated quasi-spherical oxidized Co NPs with the mean diameter  $d \approx 220$  nm and core-shell structure. X-ray photoelectron spectroscopy indicates that the core of deposited NPs consists of metal Co while the shell is CoO. Composite Co-graphene samples containing core-shell NPs reveal an exchange bias field up to 160 Oe at 4 K as detected by vibrating sample magnetometry after the field cooling procedure.

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