Nitrogen segregation in nanocarbons

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We revisit the question of nitrogen doping in nanocarbon materials [1], specifically graphene and carbon nanotubes, using a combination of experiment and theory at different spatial and energetic resolutions. Implantation coupled with scanning X-ray photoelectron microscopy (SPEM) provides information on sample evolution with implantation dose [2,3], and HRTEM with spatially resolved electron energy loss spectroscopy (EELS) gives details on individual point defect structures [4]. These are combined with a broad-ranging density functional theoretical exploration of doping structure and evolution in an attempt to build up a general large scale picture of nitrogen incorporation behaviour in these and other nanocarbons.