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Potassium doped carbon nanotubes: theory and experiment¹ ALDO ROMERO, ALEJANDRA GARCIA, Cinvestav Mex, LINA HOYOS, Univercidad Pontificio Bolivariana Colombia, FRANCISCO PEREZ, SINHUÉ LOPEZ, HUGO PONCE, CAMILO ESPEJO, Cinvestav Mex — It has been demonstrated that some of the properties of carbon nanotubes can be manipulated by doping them with different set of atoms. In this work, we present a series of experiments as well as theoretical calculations in that respect. We demonstrate our experimental procedure by doping the nanotubes with potassium and characterize them by different experimental techniques such as SEM, Raman, X-ray, etc. We observe a large change on the nanotubes curvature and the appearance of nanostructures such as helicoids and toroids. The density of those nanostructures depends on the doping concentration. We rationalize our findings by using density functional theory calculations and conclude by showing how doping can be use to increase reactivity and the presence of heptagons and pentagons, responsible for the appearance of curvature.

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