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Spin localization in ACF detected with EPR

Mateusz Kempiński, Wojciech Kempiński, Maria Augustyniak-Jabłokow, Małgorzata Śliwińska-Bartkowiak

Pure ACF were compared to the ones with adsorbed $C_6H_5NO_2$ molecules, using the EPR technique. If there was a charge transfer between the quasi-graphitic (turbostratic) particles and guest molecules, the hyperfine interaction of electron spin with N or H nuclei could give information about the host-guest interaction. To get unpaired electrons in the vicinity of nitrobenzene molecules we admix some metallic sodium during the distillation process of the nitrobenzene. In effect we observe the EPR signal from unpaired electrons from Na, with splitting of their energy levels due to the interaction with the nuclear spins of nitrogen, hydrogen and sodium. The hyperfine structure of the EPR spectrum disappears after introducing the $C_6H_5NO_2$ + Na mixture into the ACF porous matrix. At the same time the integral intensity of the EPR signal from spins localized within the ACF nanoparticles increases. It indicates that electrons are transferred from sodium-nitrobenzene mixture to the ACF carbon matrix to be localized within the nanoparticles**.**