NANOCRYSTALLINE CARBON STRUCTURES FORMED IN HIGHLY IRRADIATED POLY(VYNIL CHLORIDE), PVC.

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Our studies on irradiated PVC indicate the formation of a carbon rich material. In this report we present a study of PVC samples in powder form, which were irradiated at 1480 Mrads by gamma and electron irradiation in parallel experiments.

The irradiated samples were characterized by electron stimulated desorption (ESD), Scanning Electron Microscopy, High Resolution Transmission Electron Microscopy (HR-TEM), Electron Dispersive X-ray (EDS) and X-ray diffraction. Results show that chlorine is still present after such heavy doses of irradiation. After irradiation half of the samples were treated with tetrahydrofuran (THF) in order to separate the heavily cross linked material. The other half was left without any additional treatment. The ammount of residual chlorine is greater in the samples not THF treated.

The microstructure revealed by HR-TEM consists of crystalline particles surrounded by bands of graphite-like structures, which have now become the main focus of study.