ELECTRON SPIN RESONANCE OF IRRADIATED SINGLE CRYSTALS OF ICE

ABHANDLUNG

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Electron Spin Resonance of Irradiated Single Crystals of Ice

Part I: The Structure of the Radicals

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Abstract

Pure, HF and NH₃ doped single crystals of ice have been exposed to soft X-radiation at 80 °K. The paramagnetic centers thus created are identified to be OH-radicals, associated with structural L-defects. Three crystallographically inequivalent defect sites have been found. They have all similar principal g-values and hyperfine splittings. It is concluded that all defects have nearly identical local environments. The intensity ratio of the three radicals depends on the direction of irradiation. The possible mechanisms leading to such a dependence are discussed.