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ESR of Defect Centers in Magnesium Oxide

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45

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B8. Electron Spin Resonance of Defect Centers in Magnesium Oxide.* JOHN E. WERTZ AND JUANA L. VIVO, *University of Minnesota*.—Attempts to find electron spin resonance (ESR) absorption by imperfection centers in MgO were complicated by the multiplet spectra of impurities. After a detailed study, we found one line which disappears on heating in vacuum. The splitting factor g is 2.003 along a principal axis, and the corresponding line width is 4.2 gauss, twelve-fold narrower than for KCl. This line and an absorption band at 2600 Å which disappears on heating in vacuum, are presumably the result of excess oxygen. Heating in air at 600°C increases the intensity of the ESR line. Tentatively it is assumed that the ESR centers are O^- ions, although experiments¹ on oxygen uptake at higher temperatures would indicate that at 600° the process would be very slow. Exposure to x-rays after annealing gives an ESR line of similar g -value and width, which decays slowly.

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¹ B. V. Haxby (unpublished results).