January 1955

ESR of Impurities in MgO

John Wertz
University of Minnesota

Juana Vivó
University of Minnesota

B. Musulin
University of Minnesota

46

PHYS. REV., 100, 1810 (1955).

SP1. Electron Spin Resonance of Impurities in Magnesium Oxide.*† JOHN E. WERTZ, JUANA L. VIVO, AND BORIS MUSULIN, *University of Minnesota.*—All magnesium oxide crystals we have been able to locate show a six-line hyperfine splitting pattern found previously upon deliberate addition of manganese.[1] Technical MgO powder shows the same behavior as does also a reagent grade which has been heated to 1200°C. Their line width is as small as 1.5 gauss, very narrow for an ionic crystal, and much narrower than found previously.[1] The fourth line (counting from the low-field end) shows unusually large variations of intensity relative to the other five. Each of the principal lines has four satellites, explainable for an electronic spin of 5/2. At high spectrometer sensitivity, a number of weak lines are found in pairs. Their origin is being investigated. Heating to 200°C in the resonant cavity of the spectrometer decreases the ESR line intensity by an amount expected from Curie's law. An impurity of nuclear spin 7/2 and electronic spin 3/2 gives eight principal lines over a 560 gauss region. Each has two satellites.

* Supported in part by the Air Force Office of Scientific Research.

† To be given at the end of Session B if the chairman rules that time permits.

[1] W. D. Hershberger and H. N. Leifer, Phys. Rev. 88, 714 (1952).