

Electron Paramagnetic Resonance of Organic and Inorganic Centers in γ -Irradiated Natural Sepiolite Minerals

Rahmi Köseoğlu^a, Fevzi Köksal^b, Mehmet Akkurt^c,
and Emin Çiftçi^d

^a Erciyes University, Halil Bayraktar Health Services
Vocational College, 38039 Kayseri, Turkey

^b Ondokuz Mayıs University, Faculty of Arts and Sciences,
Physics Department, 55139 Samsun, Turkey

^c Erciyes University, Faculty of Arts and Sciences,
Physics Department, 38039 Kayseri, Turkey

^d Niğde University, Faculty of Engineering,
Geology Department, 51200 Niğde, Turkey

Reprint requests to Dr. R. K.; Fax: +90-352-4375936;
E-mail: rkoseoglu@erciyes.edu.tr

Z. Naturforsch. **61a**, 413–417 (2006);

received March 13, 2006

Natural sepiolite minerals and their γ -irradiated forms were investigated by electron paramagnetic resonance (EPR) at room temperature and at 113 K. The EPR signals in powders of natural sepiolite were observed due to clusters of Fe^{3+} ions. The paramagnetic centers produced by γ -irradiation of natural sepiolite minerals were attributed to the $\dot{\text{C}}\text{H}_3$ at room temperature and $\dot{\text{S}}\text{O}_2^-$ and $\dot{\text{S}}\text{O}_3^-$ radicals at 113 K. These centers were found to be perfectly observable above 20 mW microwave power. The *g* values of all paramagnetic centers have been measured and the *A* values of some of them have been reported. The results were consistent with the literature data for similar paramagnetic centers.

Key words: EPR; Paramagnetic Centers; γ -Irradiation;
Sepiolite Minerals.