

ESR Studies of Sepiolites in Turkey

Ulku Ulusoy [1], Motoji Ikeya [2]

[1] Earth and Space Sci., Osaka Univ., [2] Earth and Space Sci., Osaka Univ

Sepiolite is a lath-shaped magnesium-rich clay minerals. It has attracted remarkable attention by its sorptive, rheological and catalytic properties, and the usage of sepiolite clays is expanding, recently. In Turkey, development of sepiolitic clay deposits has been initiated at Eskisehir area, but main usages of these products have been only meerschaum pipe and pet litter, for a long time. Clay minerals present over other minerals the advantage of large specific surface which allows an efficient interface with solutions and make them sensitive to the environment, even after crystal growth.

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In this study three different sepiolites from Turkey were surveyed by using ESR; brown and beige sepiolite at Polatli-Turktaciri area and white sepiolite, meerschaum at Eskisehir-Sepetci area. The ESR spectra for brown and beige sepiolites at 77 K have a single characteristic peak ($g=2.01$) in the middle of sixlet lines in addition to two peaks ($g=4.80$ and 4.30) associated with Fe^{3+} . The one for meerschaum has two characteristic peaks ($g=2.04$ and 2.00) presumably Ca^{2+} . ESR intensities of the lines near the region of free spin were enhanced by gamma-ray irradiation. The results of irradiation and thermal annealing experiments suggest that ESR dating of sepiolites is possible.