

Development and Dose Evaluation of Natural Topaz for Dosimeter Radiation

Wednesday, May 20, 2015 2:00 PM (3h 30m)

In the present work, natural colourless topaz from Pakistan were irradiated gamma ray at different dose from 50-400 Gy. The samples were characterized by thermoluminescence (TL) and electron spin resonance (ESR) spectroscopy. The TL results showed that the luminescence center of topaz was appeared at 150 and 225 C. The intensity of TL was increased with increased radiation dose. The ESR signals with $g = 1.966$ and 2.012 due to Ti^{3+} and $(AlO_4)^-$ centers, respectively and increased with radiation dose. Percent error of evaluated dose from TL and ESR signals were 8 and 3, respectively. This study showed that the topaz can be used a radiation dosimeter.

Primary author: Dr HOONNIVATHANA, Ekachai (Department of Physics, Faculty of Science, Kasetsart University, Bangkok, Thailand)

Co-authors: Dr NAEMCHANTHARA, Kittisakchai (Department of Physics, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok, Thailand); Ms NAMNO, Sirinapa (Department of Physics, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok, Thailand); Ms VONGSANIT, Vanlaya (Department of Physics, Faculty of Science, King Mongkut's University of Technology Thonburi, Bangkok, Thailand)

Presenter: Dr HOONNIVATHANA, Ekachai (Department of Physics, Faculty of Science, Kasetsart University, Bangkok, Thailand)

Session Classification: Poster-1

Track Classification: Nuclear and Radiation Physics