

Information Concerning Provenance and Thermal History of Burnt Relics Using Thermoluminescence and Afterglow Color Images

Emiko Nishiyama [1], Tetsuo Hashimoto [2]

[1] Grad. School of Sci. and Tech., Niigata Univ., [2] Dept. Chem., Facul. Sci., Niigata Univ.

When dielectric materials are irradiated with ionizing radiation, some radiation-induced luminescence phenomena are observed. These luminescence color images from sliced minerals have been successfully photographed by means of a commercially available negative color film after the irradiation of X-rays. Afterglow color images (AGCI) show a variety of emission patterns dependent on kinds of minerals or thermal history.

In this work, AGCIs from the slices of burnt archaeological relics were photographed, to allow the color image analysis, in addition to the thermoluminescence (TL) observation. From these results, some information concerning provenance of ancient ceramics or thermal history of ancient kilns could be certainly obtained using the radiation-induced luminescence phenomena.