

## **Radiation Dosimetry, Dating and Microscopy with ESR Interdisciplinary Applications to Environmental Sciences**

**Motoji Ikeya**

*Osaka Univ., Japan*

The fields of electron spin resonance (ESR) dating, radiation dosimetry and imaging have progressed remarkably in the last two decades. An *International Symposium on ESR Dosimetry and Dating (2001-ESRDD-Osaka)* was organized to summarize the quarter century of ESR dating and half a century of ESR dosimetry and show new prospects at the start of 21st century.

The *First International Symposium on ESR Dating including dosimetry* was held in 1985 at Ube-Akiyoshi, where the Karst area with largest limestone cave in Japan is located. The second and fourth were at GFS, Germany, the third at NIS, USA and the fifth, Russia in 1998. *The Japanese Workshop of ESR Applied Metrology*, in which researchers of optical dating are also participating, hosted *2001 ESRDD-Osaka* by inviting researchers from abroad. The circulars were sent by e-mails and through Internet <http://pumice.ess.sci.osaka-u.ac.jp/esrdd/>

A brief review and new prospects will be given according to the main topics.<sup>1)</sup>

**1) Tokai JCO, Chernobyl accidents and A-bomb radiation**

Special lecture on JCO accident and its dosimetry, Chernobyl, Semipalachinsk, etc.

**2) Radiation effects of minerals and basic studies on waste depository**

What ESR and optical methods can do to assess the safety of radioactive waste.

**3) ESR and optical dating in geosciences toward 21st century**

Summary and new prospects of ESR & Optical dating in geosciences.

**4) ESR and optical dating and dosimetry in planetary sciences**

Dosimetry in space missions and noble methods in planetary material survey

**5) ESR imaging with applications from semiconductors to fossils**

Review of ESR imaging and their applications for interdisciplinary studies

**6) New materials ESR dosimeters and for food irradiation monitoring**

Tissue equivalent alkali-organic acids compounds for ESR dosimeter.

1) M. Ikeya: *New Applications of Electron Spin Resonance* (World Scientific, 2002) pp.500.