

CONTENTS

	Page
Preface	v
Section 0. Key Note	
New Prospects of ESR Dosimetry and Dating in 21st Century: Breakthroughs in 2001 that Revitalize Our Fields	
M. Ikeya	3
Section 1. Carbonates	
ESR Studies on Antarctic Carbonates and Sulphates	
N. E. Whitehead, G. L. Lyon, G. C. Claridge, H. Sato, and M. Ikeya	11
Implications of Electron Spin Resonance and Uranium-series Dating Techniques on Speleothems in the Kinta and Lenggong Valleys, West Malaysia	
R. F. Muhammad, D. Yoshida, A. Tani, and P. L. Smart	19
Dating of Sub Fossil Shell by ESR and K Band Spectrum for Paramagnetic Species Assignment	
A. Kinoshita, A. Brunetti, W. E. P. Avelar, F. L. M. Mantelatto, M. G. Simões, A. Fransozo, and O. Baffa	27
Conditions and New Extrapolation Method for ESR Dating of Aragonitic Mollusk Shells in Taiwan	
T. S. Shih, H. Sato, M. Ikeya, P. M. Liew, and S. H. Chien	31
A Preliminary Study on Application of EPR in Dating Marine Shells along the Pondicherry Coast, India	
J. K. Dash, S. Balakrishnan, and P. S. Rao	41
Electrically Stimulated Luminescence (ESL) and ESR of Calcium Carbonate and Feldspar	
H. Sato, C. Yamanaka, and M. Ikeya	47
Estimation of Past Carbonate Dissolution in Deep-sea Sediments Using the ESR Method	
O. Tadai, W. Soh, and A. Taira	51
ESR Spectra of Limestones from the Cretaceous-Tertiary Boundary: Traces of a Catastrophe	
D. L. Griscom & V. Beltrán-López	57
Section 2. Tooth & Anthropology	
ESR Dating as a Contributor to the Chronology of the Earliest Humans in Europe	
C. Falguères, P. Voinchet, and J. J. Bahain	67
New Clues to Limits on ESR Dating	
A. R. Skinner, B. A. B. Blackwell, N. D. Chasteen, and P. Brassard	77
ESR Studies of Authigenic Apatite Veins from Tabun Cave, Israel	
J. Bartoll & W. J. Rink.....	83
ESR Signal Separation of CO₂⁺ Radicals in Fossil Bones Using 90° Out-of-Phase Signals	
K. Inoue, M. Hirai, and M. Ikeya	87

A Study on ESR Dating Character of Tooth Enamel	93
S. M. Chen, Q. Hu, X. M. Yan, and S. Q. Guo	
U Uptake in Fossil Teeth: Lessons from Isochron Analyses and Laboratory Simulation Experiments	97
B. A. B. Blackwell, A. R. Skinner, P. Brassard, J. I. B. Blickstein	
ESR Dating of Tooth from Pre-Islamic Sitrin Saudi Arabia	119
J. Hefne, A. Yamani, O. Al-Dayel, M. Ikeya, and S. Al-Osaimi	
Luminescence and ESR Age Determinations of the Lower Paleolithic Site Evron Quarry, Israel	
N. Porat & A. Ronen	123

Section 3. Fault & Silica

Characterization of Indurated Foliated Fault Gouge from the Nojima Fault Zone	133
Y. Enomoto, Z. Zheng, and H. Ishigaki	
ESR Analysis of Fault Activity: Hydrogen Generation History	139
H. Matsumoto, M. Hirai, M. Ikeya, and C. Yamanaka	
Assessment of Fault Activity by ESR Dating of Fault Gouge Using Surface E' Center in Quartz Produced with Clay Mineralization: The Case of the Atotsugawa Fault in Japan	
T. Fukuchi, H. Mie, S. Okubo, and N. Imai	145
Paramagnetic and Radiation-Induced Centers in Natural Shocked Quartz from a Meteorite Crater	
C. Yamanaka, H. Matsumoto, and M. Ikeya	153
ESR and Luminescence Spectroscopy of Ion-irradiated Silica Glass	
H. Miyamaru, R. Toshima, T. Murasawa, N. Kubota , A. Kitamura, and A. Takahashi	159
The Investigation of ESR Dating by Using Alpha-Rays	
Ü. Ulusoy	163
The Effect of Light on Al and Ti Centers when using ESR to Date Igneous Rock	
S. Jin, G. Yang, S. Chen, and J. Chen	167
Decay Characteristics of Vacancy-Associated ESR Centers in Quartz by UV-Irradiation: A Physical Basis for Absolute Dating of Planetary Sediments	
T. Fukuchi & T. Nishimura	171
Standardization of Thermoluminescence Dating of Volcanic Rocks — Proposal of Grade Check for Reliable Geological Age	
I. Takashima, Y. Mori, and A. Mukaikubo	177
ESR Dating of Quartz Veins: Cooling Time of a Hydrothermal System	
K. Mizugaki	181
TL and OSL Dating of Eolian Dunes of the Negro River Basin, Brazil	
S. H. Tatumi, M. Yee, E. A. Kowata, A. Carneiro, and D. Schwartz	187

Section 4. Accident Dosimetry

The JCO Criticality Accident and How It Reflects on Nuclear Safety Problems in Japan	195
K. Sumita	

Retrospective Dosimetry at JCO Using Luminescence from Ceramics Pieces and Quartz Grains	T. Hashimoto, D. G. Hong, and M. Takano	197
ESR Dosimetry in the JCO Criticality Accident	K. Shiraishi, M. Iwasaki, C. Miyazawa, H. Yonehara, and M. Matsumoto	203
ESR Dose Estimation of the Radiological Accident in Samut Prakarn, Thailand Using Sugar Samples and an ESR Method	K. Shiraishi, W. Wanitsuksombut, K. Chinudomsuk, G. Suzuki, and K. Nishizawa	207
ESR and FISH Dose Estimation in an Accidental Case of Partial Body Irradiation with Gamma Radiation	A. Kinoshita, C. Sandra G. Calcina, E. T. Sakamoto-Hojo, M. L. Camparato, C. Picon, and O. Baffa	211
Section 5. Nuclear Waste Repository		
An ESR Study of Gd³⁺ Adsorbed on Kaolinite for Simulating the Barrier in a Radioactive Waste Repository	T. Matsuda, C. Yamanaka, M. Hirai, and M. Ikeya	217
Scope of ESR Study on Different Parameters of NaCl and Natural Rock Salt for Radioactive Waste Repository	H. K. Kundu	221
Section 6. ESR Dosimetry		
Some New Approaches in the Field of Solid State/EPR Dosimetry	Nicola. D. Yordanov & Vesleka Gancheva	227
Does Liquid Water Have Traces of Irradiation? Possibility of Dating and Environmental Assessment Using ESR Signals of Ice	K. Norizawa, T. Yada, and M. Ikeya	233
New ESR Dosimeter Materials Using Lithium Organic Acid Salts	G. M. Hassan & M. Ikeya	239
Application of SiO₂ Phosphor to ESR Dosimetry	M. Takami, M. Yasuda, and M. Ohta	249
Effects of Heavy Ion Irradiation on Sucrose: An Implication of ESR Dosimeter for Cosmic Rays	K. Nakagawa & Y. Sato	253
Section 7. Biological & Electrical Materials		
Radiation Induced Permeability Changes in Liposome and Thymocytes: Potential and Relevance to Biological Dosimetry	K. P. Mishra	261
Electrochemical and ESR Studies on an Excitable Lipid Membrane	T. Murata & Y. Takemaru	265
Electron Spin Resonance of Rodent Foods and Feces	S. Yokoi, M. Hirai, K. Kanosue, H. Anzai, N. Kajiwara, and M. Ikeya	273

Section 8. Technology

ESR Studies of Degradation Mechanisms of Electrical Efficiency of CMOS-SRAM due to Lattice Defects Produced by γ-Irradiation	
Q. Lin, K. Kawano, and Khyne Nyunt	279
ESR Defect Characterization of FIB Irradiated Si/SiO₂	
S. Takagi, N. Kotani, Khyne Nyunt, and K. Kawano	285
Observation of Natural and Cosmic Radiation Effects on Electronic Devices	
M. Deguchi, I. Tomisawa, T. Oka, N. Abe, and K. Kawano	289
Effect of X-Irradiation on BaTiO₃: Ta Ceramics — Electrical Properties and ESR	
Y. Uchida & T. Miki	293
Distribution of Paramagnetic Ions in Pottery	
Y. Matsuoka, H. Mitsudo, and M. Ikeya	299

Section 9. Apparatus

Developing a Two-Circle ESR Goniometer and an ESR Apparatus for Applying Uniaxial Stress for Variable Temperature Experiments	
T. Kobayashi, Y. Okamoto, A. Onozawa	305
TE₁₁₁ ESR Cavity with an Aperture for Scanning ESR Imaging	
Y. Mizuta, S. Iida, Y. Iima, M. Ikeya, and C. Yamanaka	309

Section 10. Obituary

Warrior's Way — A Tribute to Professor Huang Peihua	
B. H. Hou, R. S. Fu, and R. Y. Liang	315

Appendix I	Referee's Comment	319
Appendix II	Bibliography of ESR Dating and Dosimetry	321
Appendix III	Bibliography of OSL	345
Appendix IV	Entrance Hall	351
Author Index	353