

Development of Radium Concentration Monitoring System based on Gamma-Ray Spectroscopy

*Fumiaki Tsunomori¹, Shigekazu Nagai², Junji Yoshii³, Yoshihide Kimura⁴, Yoriyuki Kamakura⁵, Yuki Inoue⁵, Norihito Sato⁶, Shiro Sakuragi⁷, Ryuichi Shimizu⁸, V N Gluchschenko⁹

1. Geochemical Research Center, Graduate School of Science, University of Tokyo, 2. Graduate School of Engineering, Mie University, 3. Advanced Clinical Research Center, Fukushima Medical University, 4. Graduate School of Engineering, Osaka University, 5. Faculty of Information Science and Technology, Osaka Institute of Technology, 6. Chiyoda Technol corp., 7. Union Material Inc., 8. Office for University-Industry Collaboration, Osaka University, 9. Institute of Nuclear Physics, Almaty, Republic of Kazakhstan

We have developed a radium concentration monitoring system in order to analyze a radium concentration in soil samples based on a gamma-ray spectrum. A gamma-ray spectrum of a soil sample was measured by a SrI_2 solid scintillator equipped by a multi-pixel photon counter (hereinafter a detector). The detector was shielded by 5cm-thick lead blocks, because ^{214}Bi , which is a daughter elements of radium contained in cement materials, emits strong gamma-ray. We have achieved 80% background reduction. We prepared a calibration curve in order to determine a soil radium concentration by a peak area of ^{214}Bi in a gamma-ray spectrum of JG-1 geochemical reference sample (AIST, GSJ). We are going to have a discussion to improve problems of this system.

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