Contribution ID: **35** Type: **Verbal**

Synthesis of the radioisotope Mn-56@SiO2, Sm-153@SiO2, and Dy-165@SiO2 hybrid nanoparticles for radiotracer

Thursday, May 15, 2014 3:58 PM (14 minutes)

Radioisotope hybrid nanoparticles (NPs) such as Mn-56@SiO2, Sm-153@SiO2, and Dy-165@SiO2 were synthesized by neutron irradiation of the Mn-55@SiO2, Sm-150@SiO2, and Dy-163@SiO2 NPs using HANARO research reactor, respectively.
The Mn-55@SiO2, Sm-150@SiO2, and Dy-163@SiO2 NPs were synthesized by calcinations of the hybrid NPs, which is prepared by sol-gel reaction of tetraethyl silicate in the presence of the complex precursors, in air flow at 500 ℃ for 8 h.
Mn-55, Sm-150, and Dy-163 for radiotracers were selected because these elements can be easily gamma-activated from neutrons (activation limits: 1 picogram (Dy), 1-10 picogram (Mn), 10-100 picogram (Sm)).
The successful synthesis of the radioisotope hybrid NPs were confirmed via Transmission Electron Microscopy (TEM), Energy Dispersive X-ray Spectrometer (EDS), Scanning Electron Microscopy (SEM), and Gamma spectroscopy analysis, respectively.
The synthesized the radioisotope hybrid NPs could be used as radiotracers in science, environmental, engineering, and industrial fields.

Primary author: Dr JUNG, Sung-Hee (Korea Atomic Energy Research Institute)

Co-author: Ms SEO, Sang-Ei (Hannam University)

Presenter: Dr JUNG, Sung-Hee (Korea Atomic Energy Research Institute)

Session Classification: Production and Application of Radionuclides 1

Track Classification: Production and Application of Radionuclides