

Smart Materials & Structures

March 20-22, 2017 Orlando, USA

Activity size distribution of some natural radionuclides

Zain M Al-Amoudi

King Abdulaziz University, KSA

In this study, the results concerning the activity size distribution of the long-lived (^{210}Pb) radon decay product aerosols and the thoron decay product aerosols (^{212}Pb) and (^7Be) of the outdoor atmosphere are presented. Also, the mass size distribution of the aerosol particles is determined. The low-pressure Berner cascade impactor Model 20/0.015 was used as a sampling device. The activity size distribution of these radionuclides was determined by one log-normal distribution (accumulation mode) whereas the mass size distribution was by two log-normal distributions (accumulation and coarse mode). The activity median aerodynamic diameter (AMAD) of ^{212}Pb was found to be 305 nm with a geometric standard deviation (sg) of 2.41. The specific air activity concentration of ^{212}Pb was found to be $0.14 \pm 0.012 \text{ Bq m}^{-3}$. An AMAD of ^{210}Pb of 610 nm with sg of 1.8 was determined, whereas that of 550 nm with sg of 1.97 was determined for ^7Be . The specific air activity concentration of ^{210}Pb and ^7Be was found to be $0.0016 \pm 2.5 \times 10^{-24}$ and $0.00348 \pm 4 \times 10^{-24} \text{ Bq m}^{-3}$, respectively. Using a dosimetric model, the total deposition fraction as well as the total equivalent dose has been evaluated considering the observed parameters of the activity size distribution of ^{212}Pb . At a total deposition fraction of 21 %, the total equivalent dose was found to be 0.41 mSv.

Biography

Zain M Al-Amoudi has completed Doctor of Philosophy in Science (Experimental Physics) from King Abdulaziz University (KAU), KSA. She is the Head of Physics Department since 4 years and has published more than 15 papers in reputed journals. She has attended and participated in many national and international conferences.

zalamoudi@windowslive.com

Notes: