VARIATION OF RADIOLUMINESCENCE SENSITIVITY OF QUARTZ FROM ROCKS AND SEDIMENTS

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ABSTRACT: Luminescence sensitivity plays a major role on luminescence dating since poor luminescencesensitive samples can result in inaccurate equivalent doses estimates. Hence luminescence dates can also be inaccurate. Thepresence of RL emission bands in shorter wavelengths (ultra-violet) during artificial irradiation may be the cause of the bleaching and diminishing effects of optically stimulated luminescence (OSL) in natural quartz itself just like during OSL stimulation. In this presentation, we will be presenting the work on the investigation of radioluminescence (RL) of quartz samples from different geological settings and their sensitivity variation based on their provenance. Quartz from both sediments and rocks of different provenances were analyzed using RL. Two RL broad emission bands were detected for each sample. The first band is centered at 380 nm (Ultra-Violet) which is dominating while the second band is centered on 630 nm (blue).The deconvolution of these bands confirmed that spectrum is at least the sum of four emission bands located between 200 – 800 nm.The general observation is that the RL sensitivity differs to each other according to their provenance and whether is collected from rocks or from sediments. Generally, quartz from sediments is more sensitive compared to that from rocks. The geological origin of quartz also plays an important role on RL sensitivity, opening to the use of RL for sediment provenance analysis.

KEYWORDS: Radioluminescence, Sensitivity of quartz