Characteristics of ESR and TL signals of quartz in the present river bed sediments and in possible source rocks around Kizu River

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ESR, TL and OSL signals have been used for the dating of samples in Quaternary [1], [2], [3]. Recently another direction has been tried, using the ESR and TL signals as indicators of sediment provenance. The ESR signal intensity of quartz is shown to be a useful parameter to investigate the provenance of aeolian dust [4], [5]. The ESR signal intensities of quartz have been shown to be useful to distinguish the sediment provenance [6]. Quartz has been reported to show red and blue TL by the differences in origin [7].
Sediment provenance gives important information on the erosion processes, river contention, and crustal movement and so on, suggesting the environments at the time of sediment transportation. By examining the quartz crystals found in sediment and related bedrock, it may be possible to estimate the provenance of sediment.
In this study, we report the characteristics of ESR / TL signals of quartz in the present river bed sediments and in the possible source rocks, to discuss the possibilities of identifying sediment provenance.
All quartz samples were irradiated by gamma ray to a dose of 2.5kGy. ESR signals were observed by ESR spectrometers (JES-X320; X-band JEOL RESONANCE Inc.). TL signals were observed by selecting the wavelength region by using the Time-Resolving Spectroscopy System.
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