Trace element and Sr, Nd and Pb Isotopic compositions of Quaternary volcanics from Yufu-Tsurumi volcanic group

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Yufu-Tsurumi volcano group is located in northeastern Kyushu, Japan. Yufu-Tsurumi volcano group is forming the volcanic front of middle to north Kyushu together with Hime-Shima, Futago-Yama, Kujyu and Aso volcanoes. Yufu-Tsurumi volcano group consists of Yufudake volcano, Tsurumidake volcano and Garandake volcano. They are the stratovolcano which consists mainly of andesitic to dacitic lava domes and lava flows (e.g. Hoshizumi et al., 1988). From the chemical compositions of Yufu-Tsurumi volcanic rocks, it is observed that Nb/Zr ratios (0.06-0.09) are high compared to general island arc magma (-0.03). In the Y versus Sr/Y diagram, the Yufu-Tsurumi volcanic rocks are plotted across the boundary between adakite and island-arc ADR field (Defant et al., 1991). They are also characterised by low HREE relative to felsic volcanic rocks from northeast Japan arc. These chemical characteristics cannot be explained simply by the general model that the origin of island arc magma is MORB-type mantle wedge and fluid derived from subducting slab. Adakites in the SW Japan are considered to be generated by partial melt of subducting Philippine Sea plate (e.g. Morris, 1995; Shibata et al., 2005). The relationship between 87Sr/86Sr and Sr/Y ratios is consistent that partial melt of subducting Philippine Sea plate is one of the source material of Yufu-Tsurumi volcanic rocks. On the other hand, the trends of Pb isotope systematics indicate that the terrigenous sediments from the Nankai Trough (Shimoda et al., 1998) can be another source material of Yufu-Tsurumi volcanic rocks. According to these observations, partial melt of subductiong slab and terrigenous sediments have to be taken account for the genesis of Yufu-Tsurumi volcanic rocks.