Characteristic properties of distal and proximal tephras in the Mikurajima Island, Izu Islands.

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Mikurajima of the Izu Islands is the stratovolcano island and located at 200 km south of Tokyo. The latest volcanic activity is about 6,300 years ago, there is no eruption activities in history. Mikurajima volcano is characterized by high occurrence frequency of andesite in volcanic front on the Izu arc(Isshiki,1980). Study on tephras distributed in the Mikurajima volcano has been reported by Sugihara & Shimada(1999),and Sekiguchi et al.(2001).They reported 6 tephra in Mikurajima island.(From the top Kozushima Tenzyosan:A.D.838,Iz-Kt,latest eruption of Mikurajima volcano:Mk-3,Kikai-Akahoya:7.3ka(Machida & Arai,2003),red scoria originated Mikurajima:Mk-2,rhyolithic tephra with unknown source:Mk-G, and fall pumice Mikurajima volcano tephra:Mk-1).The latest tephra of Mikurajima volcano:Mk-3,erupted from the lava dome in the southeastern in part of the islands(Sugihara & Shimada,1999).However, comparison/identification is insufficient of tephra compared to Iz-Kt. So it is necessary to compare and examine the Niijima Mukaiyama tephra(A.D.886,Iz-Mk).
They are rhyolithic tephra and indicated SiO2=77-79 wt.%. They erupted same age and constituent minerals and the refractive index of volcanic glasses are similar. So difficult to identify in distal place. Recently both can be distinguished by content of K2O in volcanic glasses. Iz-Kt indicated high K2O content compared with Iz-Mk. Both tephras are important indicator tephra widely distributed in the Izu islands. So it is important to clarify Iz-Kt distribution on Mikurajima.
In this research, we report on the tephras confirmed in Mikurajima. We found 18 tephras on Mikurajima island, and 4 tephras are confirmed(Iz-Kt,Mk-1,2,3).
1)The tephra confirmed Iz-Kt in previous study, we performed refractive index measurement by RIMS2000 and principal component analysis by SEM-EDS for volcanic grasses. This tephra present cryptotephra in topsoil. This glasses is pumice type and reflective index indicated n=1.496-497.Principal component:SiO2=77.0-78.5 wt.%,Al2O3=12.5-13.0 wt.%,FeO=0.5-1.3 wt.%,CaO=0.2-1.7 wt.%,K2O=2.7-3.9 wt.% and Na2O=3.6-4.6 wt.%.Iz-Kt and Iz-Mk confirmed on the Izu islands,they shows 3.8 wt% and 3.5 wt.% K2O content, respectively. So this tephra confirmed Iz-Kt.
2)For the latest tephra on Mikurajima volcano Mk-3,it is bad foaming yellow pumice between black volcanic sand.Maximum particle size of pumice is 10cm and maximum layer thickness is over 200cm.The lithophasies of MK-3 shows Prinian eruption.However,the detail of Mk-3 are unknown and under consideration.We performed principal component analysis as well.As a result,SiO2=62.3-70.7 wt.%,Al2O3=14.8-21.0 wt.%,FeO=2.2-3.8 wt.%,CaO=4.1-7.5 wt.%,K2O=0.3-0.9 wt.%,Na2O=3.8-4.4 wt.%.The values indicate andesite-dacite.
As a future work,to find and confirmed indicator tephra originated another volcano (like Iz-Kt and Mk-G).By comparing and identifying indicator tephra, I believe that we provide new distribute axis and age axis for history of eruption history in Mikurajima and tephra in the Izu Islands.And it is important to grasp detail of Mk-3 which is the latest eruption of Mikurajima volcano in order to grasp the volcanic activity of Mikurajima.

Keywords: Izu Islands, Mikurajima volcano, volcanin activity history, Kozushima Tenzyosan Tephra

