# Pressure effect on element partitioning between garnet and silicate melt

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The knowledge of partitioning behavior of elements between mineral and silicate melt is required as fundamental information to resolving the evolution process of the terrestrial planets from geochemical approach. Although many investigations have been done, pressure effect on element partitioning has not been clarified yet. In this study, we performed high pressure - high temperature melting experiments on alkali basalt, and measured pressure effect on element partitioning between garnet and silicate melt.

We added 26 elements in 100 - 200 ppm to alkali basalt (JB1), and used as the starting material. Melting experiments on this doped basalt were performed, by using Kawai-type multi-anvil apparatus at 5 - 15 GPa. Chemical compositions of the recovered specimens were measured by EPMA and LA-ICP-MS, and partition coefficients were acquired.

Among monovalent elements, partition coefficient could be measured in Na only, and that was increased from 0.05 at 5GPa to 0.5 at 15GPa. In the case of divalent elements, no obvious change in partition coefficient with increase in pressure was found. Among the trivalent elements, partition coefficient of Al did not change with increase in pressure, while it was found that the partition coefficient of the other trivalent elements decreased with pressure. In the case of tetravalent elements, it was also found that partition coefficient of Si was almost constant in all pressure conditions, but partition coefficient of the other tetravalent elements decreased under higher pressure conditions.