He and Ar diffusivity in basaltic glasses and melts

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Recent models of the relative and absolute noble gases abundance in oceanic basalts have proposed that degassing has occurred out of equilibrium [1-2]. In order to constrain the lack of noble gas diffusion data at magmatic conditions, we measured He and Ar diffusivities in silicate liquids and glasses by inducing diffusion profiles at high temperatures (up to 1550°C), and using classical vacuo stepped heating experiment.

We observe (Fig 1) that He and Ar diffusivities converge at high temperature, as do the Ar isotope diffusivities, such that their diffusivities are equal at T> 750 C, consistent with diffusion compensation.

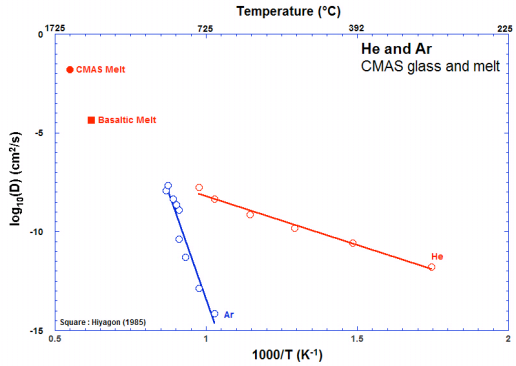

Figure 1: Blue: Ar in glass; Red: He in glass (line) and liquids (circle and square).

Our data suggest that even if disequilibrium degassing occurs during magmatic volatile loss (as suggested from other tracers [3]), this will not significantly fractionate relative noble gas abundances due to similar He and Ar diffusivities at magmatic conditions.

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Studies of Air Quality Index of industrial area of Jamshedpur, East India

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Air pollution is a major environmental concern in many cities around the world. The major causes of air pollution include rapid industrialization/urbanization and increased none environmentally friendly energy production. The purpose of this paper to highlight the ambient air samples were collected between Jan 2000 to June 2011 in the urban-industrial area of Jamshedpur city, by the high volume sampler, quality of air were monitored. The particulate matter (PM_{10} & $PM_{2.5}$), Sulphur dioxide (SO_2), Nitrogen oxide (NO_x), Ozone (O_3), Suspended particulate matters (SPM) and Mercury (Hg) which give a fair idea of pollution load carried by the air. The monitoring data were collected from two sites randomly selected in Jamshedpur city. The Air Quality Index (AQI) of PM_{10} & $PM_{2.5}$ concentration was found to be moderate, alike results are found in gases like SO_2, NOx and O_3 concentrations were discussed.

Keywords: Urban-industrial area, High volume sampler, Ambient air, Air Quality Index

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