AWSFL008-DS3

NSF Award Abstract - #0001821

Collaorative Research: Volatiles (H20 and CO2) in Mariana and Izu Arc Magmas

NSF Org	OCE
Latest Amendment Date	September 7, 2000
Award Number	0001821
Award Instrument	Standard Grant
Program Manager	Bilal U. Haq OCE DIVISION OF OCEAN SCIENCES GEO DIRECTORATE FOR GEOSCIENCES
Start Date	September 1, 2000
Expires	August 31, 2004 (Estimated)
Expected Total Amount	$252140 (Estimated)
Investigator	Timothy L. Grove tlgrove@mit.edu (Principal Investigator current)
Sponsor	MIT 77 Massachusetts Avenue Cambridge, MA 021394307 617/253-1000
NSF Program	1620 MARINE GEOLOGY AND GEOPHYSICS
Field Application	0204000 Oceanography
Program Reference Code	0000,OTHR,

Abstract

Recommended project is for a study of the volatile flux in the Izu-Bonin-Mariana (IBM) arc system. Water and CO2 analyses will be done using the Fourier Transform Infrared Spectrometry (FTIR) method on glassy inclusions from olivines, laser-ablation, inductively-coupled plasma mass spectrometry (LA-ICPMS) trace element analysis on these same inclusions, and also will do experimental phase equilibrium studies with IBM basalts at pressures ranging from 100-800 megapascals in water saturated and undersaturated conditions. This work is very important for understanding mass balances in arc systems, addressing key unknowns in volatile flux budgets. The samples to be used are already well characterized. The research will address the relative role of decompression versus flux melting for these samples, determine key phase equilibria relationships under hydrous conditions, and develop melt geohygrometers to estimate water contents in IBM lava compositions.
