



AWSFL008-DS3

NSF Award Abstract
- #0001902

**Collaorative Research: Magma Generation and
Tectonics in the Early Mariana Arc
System Revisited**

NSF Org OCE

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OCE DIVISION OF OCEAN
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NSF Program 1620 MARINE GEOLOGY AND
GEOPHYSICS

Field Application 0204000 Oceanography

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Abstract

Recommended project is for a comprehensive geochemical and geochronological examination of Eocene to Miocene volcanism in the southern arc and backarc of the Izu-Bonin-Marianas (IBM) arc system, tracing its older development with time. In doing so, the recommended research will also re-examine well-characterized samples that have been previously investigated using older, obsolescent analytical techniques. This study will examine the changing nature of volcanism in the IBM system, as it transformed from "boninitic" volcanism associated with subduction initiation to the more "normal" tholeiitic and calc-alkaline arc volcanism also seen today in the modern volcanic arc and backarc. This study also will examine the changing nature of the mantle sources during this transformation, as well as the implications they carry for tectonic processes during the arc system evolution. Previously sampled lavas and other volcanic rocks will be supplemented by collection of new samples during field work on Guam; all of these samples will be analyzed for major and trace elemental composition, isotopic composition, and geochronological ($^{40}\text{Ar} - ^{39}\text{Ar}$) dating using the latest analytical techniques.

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