

Closing Report on Faculty Research Grant Entitled, “**A High-Pressure Experimental Laboratory at IUSB**”

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1) Description of Grant Supported Activity

While under the support of a Faculty Research Grant during the summer of 2004 I began construction of a high-pressure experimental laboratory at IUSB and made several trips to Argonne and Brookhaven National Laboratories to complete the first stage in our experimental effort to investigate hydrocarbon formation in the Earth’s mantle.

During the summer I acquired the basic equipment necessary for us to prepare experiments: the high-pressure laboratory now has anvils (both diamond and silicon carbide) for performing high-pressure experiments, a cell for maintaining anvil alignment, a microscope, basic tools for sample preparation, and we are almost finished with the construction of an electronic discharge machine, EDM, which is used for the construction sample chambers.

I spent a week at Brookhaven National Lab and made several two-day trips to Argonne National Lab collecting data. Data collection went very well, and the rest of the summer was spent analyzing data and writing a manuscript.

2) Were you able to complete the project? Describe any difficulty you had.

We completed the first part of our research effort and have published our first paper. The results, methane generation at the conditions of the Earth’s mantle, are very exciting: I now view this as an ongoing research project and expect to focus on this type of investigation for the next couple of years.

The high-pressure laboratory is under way and we are equipped for preparing samples for analysis at national facilities. The next step on this front is to submit grant applications to acquire the analytical equipment to perform analysis in house.

3) Did, or will, the project result in a specific product -- a manuscript, composition, syllabus, etc? If so, please describe and indicate state of development.

Our first manuscript was completed and submitted at the end of the summer. It was accepted for publication in the Proceedings of the National Academy of Sciences and has been well received. It generated quite a bit of media attention, and resulted in news stories in the New York Times, San Francisco Chronicle, Nature, Science and quite a few others. Furthermore, I was interviewed for radio programs in both Germany and Canada.