U.S. DEPARTMENT OF ENERGY
NUCLEAR ENERGY RESEARCH INITIATIVE
ABSTRACT

PI: **Kenneth Stroh** **Proposal No.: 99-0188**

Institution: **Los Alamos National Laboratory**

Collaborators: **Texas A&M University**

Title: **Nuclear Process Heat for Clean and Efficient Utilization of the Fossil Resource**

This project will seek to develop a concept for a higher-temperature gas-cooled reactor and to explore the options for coupling reactor heat to an endothermic chemical process. The steam reforming of methane will be the focus of the design effort, which acts as a surrogate for other candidate chemical processes. Potential gains from the application of advanced materials and fuels will be quantified, and the development required will be identified.

This proposal directly supports the Nuclear Energy Research Initiative (NERI) goals of advanced concepts development, laboratory /university collaboration, and research infrastructure maintenance. This project engages university students and faculty with researchers at a national laboratory in developing an innovative and technically stimulating "real-world" design. The goal of international cooperation may be pursued beyond the proposed project. Such cooperation could include the developers of the Japanese High Temperature Test Reactor and the German nuclear process heat researchers. The International Atomic Energy Agency has recently launched a coordinated research program to explore gas-cooled reactor industrial uses, with initial interest from eight nations. Industrial collaboration and technology transfer to industry can occur as innovative concepts mature through analysis, trade and design studies, and confirmatory experiments.

This project addresses the NERI Nuclear Technology Area of fundamental science and technology and the NERI Engineering Research Category of reactors, system and component design development, fuel systems development, materials science, chemical science, and engineering science.