

Opportunities for Catalysis Science in the 21st Century

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Catalysis is coupled in an essential way to energy generation and usage, environment management and cleanup and the economy of the United States. At the present time the community is presented with a tremendous opportunity where new funding in this area could have a major impact both on basic science (discovery) and technology. This opportunity is presented due to the significant advances in characterization techniques, synthesis and nanofabrication, theoretical modeling, and the understanding of reaction dynamics that resulted from research activities of the late 20th century. Research in catalysis spans a variety of endeavors, including homogeneous, heterogeneous and bio-catalysis. The potential for synergism in these areas is tremendous.

BESAC recommends that a call for proposals be issued that is focused on the creation of new and innovative approaches to research in catalysis. Proposals should be solicited from multiple investigator, multi-institutional teams, presenting novel approaches to integrating or coordinating the various aspects of catalysis (heterogeneous, homogeneous and biological). The proposals should address the integration of catalytic research with advanced experimental techniques, theory and modeling and advanced approaches to synthesis (including areas such as combinatorial chemistry) and nano-fabrication. Participation by investigators outside of the conventional catalysis arena is strongly encouraged.

All proposals should specifically address modes of interaction with the DOE nanoscale science research centers, and the national user facilities. Consideration should be given to methods (such as virtual access) to enhance involvement of students from other institutions and industrial users from throughout the country. Proposals should specifically address their approach to surmounting the significant barriers that often exist to the implementation of new understanding and new processes in real world applications of catalysis.