



National Science Foundation

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2016 06 01 NSF and NSFC announce jointly funded collaborative Environmental Sustainability projects

The NSF Engineering Directorate (ENG) and the National Natural Science Foundation of China (NSFC) Department of Engineering and Material Sciences (DEMS) announce three new joint awards, in the second round of competition under its partnership in Environmental Sustainability. [The third competition was recently released; see [Dear Colleague Letter: NSF/NSFC Joint Research on Environmental Sustainability Challenges](#)

2015 Proposals were received in two areas: Combustion related to Sustainable Energy, and Urban Water Sustainability. Following independent review at NSF and NSFC, three proposals highly ranked by both agencies were awarded as follows:

#1603249 [**Deposition of ash and its effect on heat transfer during the oxy-combustion of biomass and biomass-coal blends**](#)

US PI: Jost Wendt, University of Utah.

China partner: Xu Minghou, Huazhong University of Science and Technology. This project will enable implementation of oxy-combustion of biomass and biomass-coal blends for power generation. This technology, when followed by carbon sequestration, has the potential to have significant impact because it can simultaneously produce electricity and decrease CO₂ emissions, using essentially conventional equipment.

#1605202 [**UNS: U.S.-China: Integrated Systems Modeling of Food-Energy-Water \(FEW\) Nexus for Urban Sustainability**](#)

US PI: Ming Xu, University of Michigan.

China partner: Yang Zhifeng, Beijing Normal University.

This project will advance the science and engineering of urban Food-Energy-Water (FEW) nexus systems by developing and applying an integrated systems modeling framework using case studies from the cities of Detroit and Beijing. The results will identify areas for efficiency improvement, and evaluate the consequences of policy and technology scenarios.

#1604630 [**SusChEM: Co-firing Biomass and Coal under Pressurized Oxy-fired Combustion Conditions**](#)

US PI: Eric Eddings, University of Utah.

China partner: Luo Zhongyang, Zhejiang University.

The use of biomass as a co-firing fuel with coal is a viable option for reducing net CO₂ production from coal-fired power generation. Oxy-combustion is also considered a potential near-term option for enhancing carbon capture and storage (CCS). This project will utilize bench-scale high-pressure reactors under both combustion conditions, to understand how to integrate these technologies for use of biomass combustion for power generation.



#1604630 [SusChEM: Co-firing Biomass and Coal under Pressurized Oxy-fired Combustion Conditions](#)- View of Building 1 of the Industrial Combustion and Gasification Research Facility at the University of Utah. Photo courtesy of Eric Eddings, University of Utah.

NSF-Beijing is pleased to see these projects awarded, and we look forward to sharing the results of this important U.S.-China collaborative work as it emerges over the next several years. NSFC also announced the joint projects on its official website, more information can be found at [2015 年度国家自然科学基金委员会 \(NSFC\) 与美国国家科学基金会 \(NSF\) 环境可持续性合作研究项目批准通知](#)