

Integration of Sustainability into CHBE 486/ENCH 686: Heterogeneous Catalysis for Energy Applications

Dongxia Liu

Department of Chemical and Biomolecular Engineering, University of Maryland

CHBE 486/ENCH 686 Heterogeneous Catalysis for Energy Applications is a new course offered for senior undergraduates and graduate students in Fall 2013. This course will provide a comprehensive overview of heterogeneous catalytic science and technology for energy conversion and utilization applications. One thirds of this course will cover the historic perspective and future developments of catalysis and energy, especially for conversation and utilization of sustainable (renewable) energy resources such as biomass. Course lectures, excise problems, and course team projects will cover the nanomaterials and techniques used for production of renewable fuels and chemicals.

Sustainability Learning Objectives At the end of the course, students are expected to:

- (i) understand the importance of sustainable energy supply for the society.
- (ii) understand the catalyst and catalytic processes used in production of sustainable fuels and chemicals from biomass.
- (iii) have a deep understanding on a variety of industrial practices for energy conversion and unitizations for the future sustainable development.

Outcome Measurement and Assessment

- (i) 1-2 homework assignments on the sustainable energy conversion topics covered in the classroom and reading assignment.
- (ii) Team project and scientific article critique focusing on recent catalyst nanomaterials and technologies for energy utilizations.