

# “Wood-to-Wheels”

## Research Experiences for High School Teachers in Sustainable Transportation Technologies

Would you like to?

- Be an active participant in one of three established research projects.
- Develop your knowledge of engineering, engineering careers, and “Wood-to-Wheels” (W2W) biofuels?
- Transfer your knowledge and experiences in research to your classroom?
- Improve instructional practice by engaging your students in active learning around real-world challenges?
- Build a collegial network of teachers and faculty?

The W2W Research Experience for teachers will include laboratory activities that progress from fundamental science and engineering concepts through applications of those concepts in the laboratory and conclude with integration of the concepts to gain deeper understanding of an engineered system.

Each teacher will be part of a research team of faculty and graduate students engaged in a major, funded research project. During the experience, you will collaborate with a faculty mentor to create a teaching unit that incorporates content knowledge, research, science and engineering.

### What’s involved?

- 6 week research experience **July 9 – August 17, 2012**
- \$1,000 per week stipend
- room and board in university apartments provided
- supplies for your classroom provided
- modest travel stipend to/from Michigan Tech and Professional Conferences provided
- draw upon the expertise of Michigan Tech’s engineering and natural sciences faculty
- incorporate research into your teaching units
- earn graduate credit at no additional cost



**Biofuels Conversion Laboratory**

- Produce and purify a liquid transportation biofuel starting with wood biomass using an integrated set of laboratory-scale experiments.
- Gain a more complete understanding of the sustainability issues surrounding biofuels produced from forest resources



**Forest Biotechnology Laboratory**

- Help develop fast growing bioenergy trees through molecular genetics and genomics of cell wall synthesis
- Study genetic improvements of lignocellulosic products for bioenergy industries



**Biofuels Combustion Laboratory**

- Conduct research in a suite of labs from fundamental combustion with laser based diagnostics to hybrid vehicles to assess tank-to-wheel outcomes of biofuels coupled with advanced technologies as methods to meet future CAFE, CO<sub>2</sub>, and emissions regulations.

