

MSU – Energy Storage and Generation RDT Consortium
Exploratory Workshop Nov. 4 2010

The state of Michigan has an exceptionally strong commitment to vehicle electrification. It is essential to have a broad and vibrant research, development and training (RDT) base to support this industry and other renewable energy technologies that are developing in our state. Building on a strong existing funding base in battery, thermoelectric and solar materials and devices we plan to establish a closely coupled MSU/Industry consortium to identify and solve key R&D challenges in vehicle electrification and renewable energy technologies. To instigate this program, we plan a first exploratory workshop that will focus on R&D for battery, thermoelectric, solar, fuel cell and wind technologies. The consortium will act as a focal point in three areas:

- (i) ***Development and execution of R&D projects*** of interest to the consortium, including leveraging of Industry and University support to secure ongoing support from federal and state funding sources. Both large and small business opportunities will be pursued.
- (ii) ***Enabling access and technical support for use of specialized equipment and facilities*** in existing MSU materials centers and in the laboratories of participating faculty. New equipment of interest to the consortium will be pursued through local and federal funding opportunities.
- (iii) ***Development, in consultation with consortium members, of training courses in energy materials and devices.*** We expect that these courses will be of two week duration and will include online materials that the participants may refer to after completion of the course(s). Workshops and online reports in areas of interest to the consortium will be developed. Opportunities for faculty and student visits to industry and for industry visits to faculty research groups will be supported.

Core MSU faculty include:

Greg Baker. Organic synthesis. Novel semiconductors and electrolytes.
Warren Beck. Ammonia as a fuel.
Andrew Christlieb. Computational methods. Electromagnetics.
Larry Drzal. Graphitic materials. Composites. Batteries. Photovoltaics.
Phillip Duxbury. Modeling. Photovoltaics. Structural characterization.
Tom Hamann. Photovoltaics. Atomic layer deposition.
Tim Hogan. Thermoelectric materials and devices.
Wei Lai. Battery materials and devices. Morphology effects, electrochemistry.
Bhanu Mahanti. Modeling of electronic structure. Thermoelectrics.
John McGuire. Ultrafast optics, Multiexciton processes, graphene and inorganic NP.
Jim McCusker. Photochemistry. Dye sensitized solar.
Don Morelli. Thermoelectric materials.
Jason Nicholas. Solid oxide fuel cells.
Aaron Odom. Inorganic chemistry. Novel absorbers.
Feng Peng. Control systems for electric vehicles.
Viktor Poltavets. Materials Chemistry. Battery and thermoelectric materials.
Keith Promislow. Modeling. Fuel cell morphology. Photovoltaics.
Harold Shock. MSU engine laboratory.
Mitch Smith. Ammonia as a fuel.
Elias Strangas. Electric drives.
Greg Swain. Fuel cells.
Pengpeng Zhang. Scanning probe microscopy. Polymer based photovoltaics.

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Exploratory Workshop, November 4th 2010 – Kellogg center**

Tentative Program

- 09:00-09:10 Welcome and discussion of university support (Ian or Jim)
- 09:10-09:20 Outline of meeting objectives (Larry)
- 09:20-09:40 State programs (MEDC person)
- 09:40-10:00 ORNL, Argonne programs
- 10:00-10:30 Industry perspectives, how can MSU help industry in this area.
(Phil, Larry as moderators)
- 10:30-10:45 Coffee break
- 10:45-12:10 Federal programs. NSF, DOE, DoD, Tardec, 4 presentations.
(Jim, Keith as moderators)
- 12:10-12:30 Overview of MSU Facilities and infrastructure, Analytical,
Characterization, Testing. Outline of faculty expertise. (Larry, Phil, Jim)
- 12:30-02:30 Lunch and Posters: Batteries, Fuel Cells, Thermoelectrics, Solar, Wind.
- 02:30-04:00 Breakout sessions. Focus groups on:
Batteries (Leads: Larry Drzal, Wei Lai, Jeff Sakamoto, Greg Baker...)
Fuel Cells (Leads: Jason Nicholas, Scott Barton, Keith Promislow,
Andrew Chrislieb...)
Solar (Leads: Jim McCusker, John McGuire, Tom Hamann.....)
Thermoelectrics (Leads: Don Morelli, Bhanu Mahanti, Tim Hogan...)
Wind (Farhang Poughourbat...)
- 04:00-04:15 Coffee Break
- 04:15-05:00 Discussion of group priorities and consortium structure and operation
- 05:00 Adjourn