

The power of networking
People and programs at UMass

Green Careers Conference

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Loren Walker
Office of Research and Engagement
loren@research.umass.edu

Your GREEN networking questions answered...

- What to know?
- Where to go?
- And...
- Why UMass is #1
- *Or*
 - Evidence that *Clean Energy for the Commonwealth is "Powered by UMass"*

Clean Energy for the Commonwealth



umass.edu/green

Clean Energy for the Commonwealth

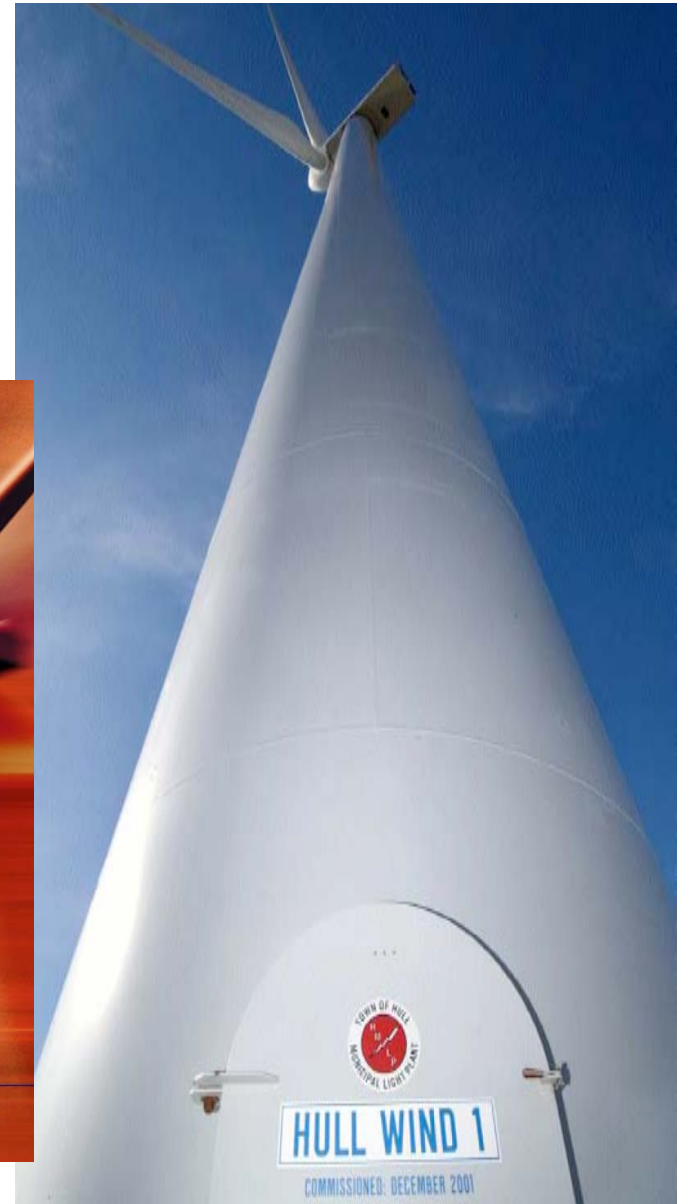
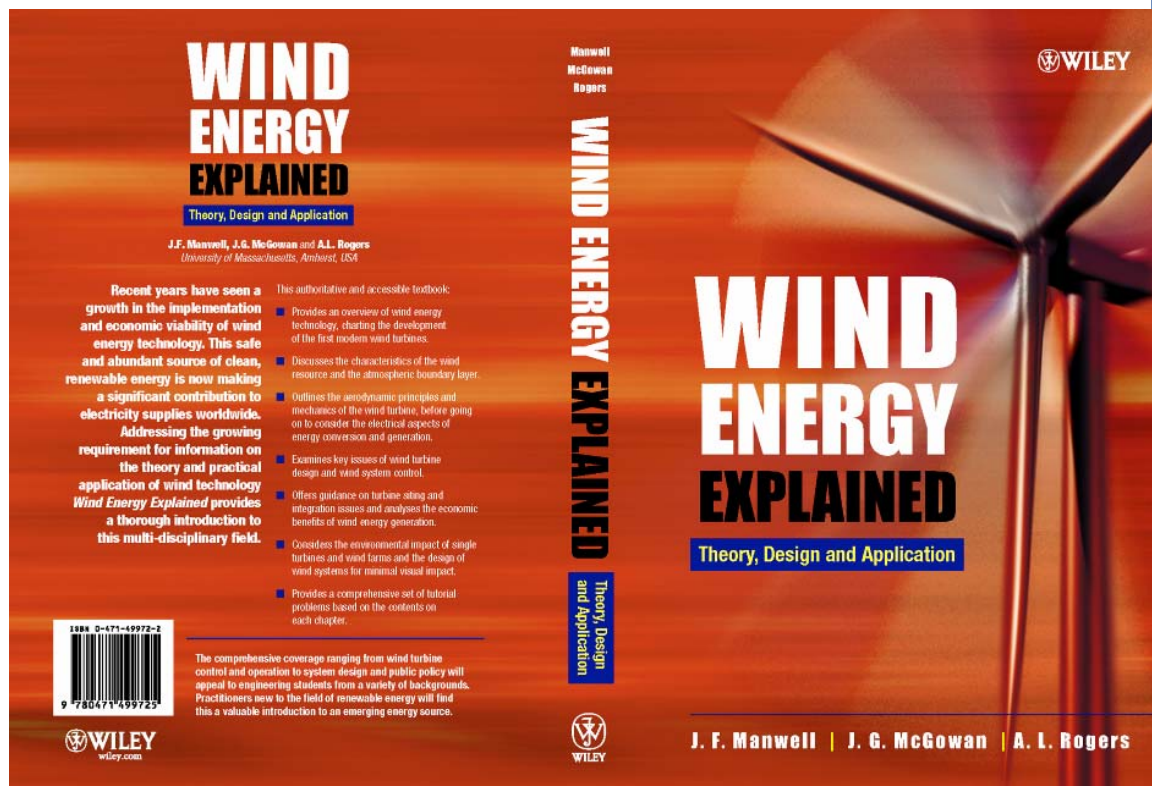
Solar/Geothermal	Fuel Cells/Batteries	Biofuels	Wind/Ocean	Efficiency/Emmissions
Advanced Polymers and Nanomaterials				
Organic optoelectronics Nanofabrication using block copolymer templates Conductive nanotubes/quantum dots Polymer-inorganic nanocomposites	Nano-Imprint lithography Nanomagnetics MEMS	Nanoporous membranes Biohybrid materials Zeolite membranes Nanostructured catalysts	High-strength lightweight materials	Nanoparticle-polymer combo. (OLEDs)
Electrical Systems Quantum electronics Semiconductor thin films Microelectronics	Hydrogen Storage Nano/Micro-electronic sensor design Novel nanostructured materials High-surface-area porous materials	Chemical Catalysis Fundamental biofuels reactions: - Heterogeneous catalysis - Fast pyrolysis (to bio-oils) - Microwave control of catalysis Catalyst synthesis/characterization Bio-oils refining to fuels & chemicals Biomass gasification	Mechanical Eng., Mechatronics & System Design Wind resource assessment Offshore wind energy Hybrid systems design Wind-produced hydrogen Energy storage Prognostics and Health Management (PMH) & control sys. Geotechnical evaluation	Energy Management Hierarchical power management Low-power device networks Energy scavenging
Thermodynamics Energy analysis Theoretical thermodynamics Heat transfer	Microbial Biotechnology <i>Geobacter sulfurreducens</i> <i>Clostridium phytofermentans</i> <i>In-silico</i> modeling Directed evolution Metabolic engineering		Meteorology Remote sensing Turbulence in stratified flows Climate modeling	Enviro. Engineering Wastewater energy recovery, re-use
Photocatalysis Photocatalytic H ₂ O purification Solar-electrolyzer H ₂ fuel cell storage	Plant Biotechnology Biochem., Cell wall struct., Agronomy <i>Crambe abyssinica</i> – energy crop	Building Design Heat transfer, Fenestration Energy efficient and environmentally benign materials	Carbon Capture Pollution control technologies CO ₂ sequestration (deep ocean/geo) Enhanced oil recovery/extraction	
Geologic Assessment Analytical geology Passive seismic analysis Inventory of New England bedrock geology	Charge Storage/Conv. Electrochemical storage cells Nanostructured conducting polymers Redox charge storage Supercapacitors	Process Engineering Biomanufacturing Fuel injection (atomization) modeling	Ocean Science Coastal environ. sensing/modeling Quantitative marine carbon cycling	Flame Modeling Combustion chemistry Molecular-beam mass spectrometry
Computational Fluid Dynamics Dynamics of stably stratified flows Turbulence modeling				
Environmental, Economic, Industry, Market, and Policy Analyses				

What to know?

- Your subject(s)
- What you can do
- Where you want to go
 - Don't be afraid to work for free... at first.

Clean Energy for the Commonwealth

We wrote the book!

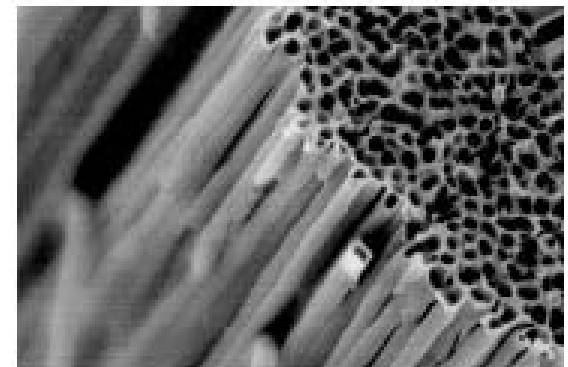
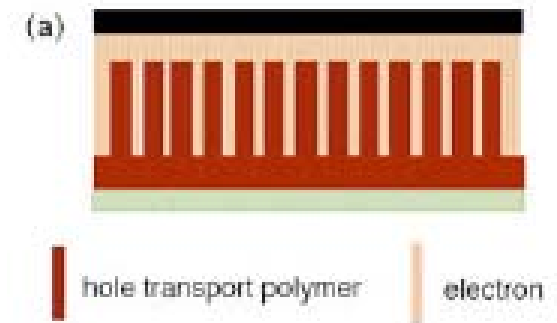


Clean Energy for the Commonwealth

Stone age → Bronze age →
Iron age → **Polymer Age**

Polymer Applications:

- Thin-film photovoltaics
- Nanostructured light-harvesting materials
- Ultracapacitors
- Fuel cell membranes & electrodes
- Efficient LED lighting
- Soft electronics
- Hydrogen storage





Where to go?

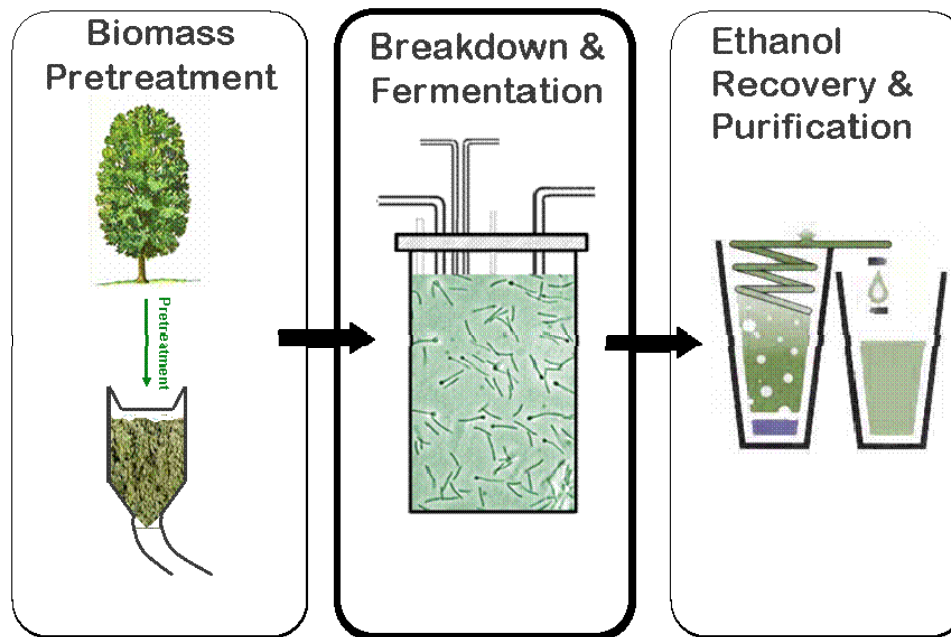
"Clean energy is a core part of Massachusetts' economic future. Now is the time to redouble our efforts to reduce energy use, increase energy independence, curb greenhouse gases and accelerate investment in the clean energy economy. Clean Energy Week - including its signature event, the Conference on Clean Energy - will shine a spotlight on our clean energy future as businesses, government leaders, educators and others team up to share ideas and develop innovative solutions."

- The Honorable Deval Patrick, Governor of the Commonwealth of Massachusetts

	MORNING	AFTERNOON	EVENING
MONDAY NOV 9	Set Squared Event	Set Squared Event	Set Squared Reception
TUESDAY NOV 10	Clean Energy Connections Conference & Opportunity Fair Boston Cleantech Venture Day	Clean Energy Connections Conference & Opportunity Fair Boston Cleantech Venture Day	Clean Energy Connections Reception Boston Cleantech Venture Day Reception
WEDNESDAY NOV 11		University Research Briefing Day	University Research Briefing Day Reception New England Clean Energy Council Green Tie Gala
THURSDAY NOV 12	Conference on Clean Energy Day 1	Conference on Clean Energy Day 1	Conference on Clean Energy Reception US-Canada Energy Conference Day 1
FRIDAY NOV 13	Conference on Clean Energy Day 2 US-Canada Energy Conference Day 2	Conference on Clean Energy Day 2 US-Canada Energy Conference Day 2	
SUNDAY NOV 15	Combined Jewish Philanthropies Energy Independence Event	Combined Jewish Philanthropies Energy Independence Event	

Clean Energy for the Commonwealth

- The “Q” Microbe



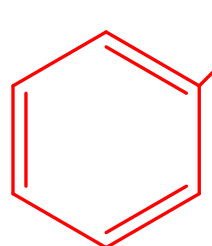
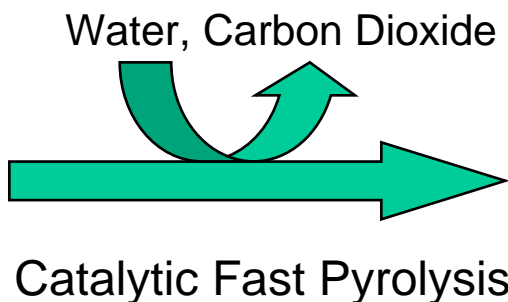
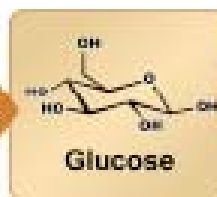
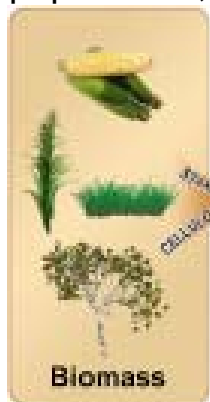
Clean Energy for the Commonwealth

The "Greening" of Gasoline

START →

Woody Biomass:

wood waste, agricultural wastes (corn stover, sugarcane waste) paper trash, energy crops.



→ FINISH
Gasoline:
 Xylenes and Toluene



← A small-scale portable reactor for liquid fuel production by distributed fast pyrolysis



Contact: George Huber, PhD Chemical Engineering

Carlson, Vispute, and Huber, Green Gasoline by Catalytic Fast Pyrolysis, ChemSusChem, 2008, 1, 397.

Where to go?



NOVEMBER 10 in Springfield, MA
www.umass.edu/green/conference

