**Laboratory for Emerging Energy Research (LEER)**

<http://www.leer.uwaterloo.ca/>

**Location**

E3-2036, ERC-2001

**Management**

Director: John Wen (john.wen@uwaterloo.ca; x38362)

**Users**

* Undergraduate Students
* Graduate Students
* Industry Partners
  + Microbonds Inc.
  + Ag Energy Coop
  + Union Gas
  + DRDC
  + Cestoil Chemical Inc.

**Research**

* Catalytic combustion for cleaner utilization of fossil fuels
* Emerging Energy Technologies in Energy Conversion and Storage
* Plasma Gasification of Biomass West
* Nanostructured Energy Storage Devices
* Engineered Nanocatalyst for NOx and Soot Reduction
* Nanothermite Synthesis, Characterization and Applications
* Smart energy network: concept development and validation

**Selected Projects**

* Thermodynamics, reaction kinetics and transport phenomena during combustion of biofuels and gasification of biomass
  + Funded by Auto21, NSERC, CFI, MITACS, FedDev ARC
* Large-scale and low-cost production of nanoparticles, nanowires and carbon nanotubes
  + Funded by NSERC and CFI
* Processing, characterization and assembly of nanoparticles and carbon nanotubes for energy conversion and storage devices
  + Funded by NSERC and ORF-PI: Amir Khajepour
* Synthesis, characterization and application of nanothermite in civil and military applications
* Collaborated with Microbonds Inc. and DRDC
* Smart energy network: concept development and validation
* Biofuel NET: Catalytic combustion of biofuels
* Carbon Management Canada: CO2 storage using mining waste
* OCE and NSERC: Nano-catalysts for cleaner natural gas combustion

**Equipment**

* GC
* FT-IR
* GEK gasifier
* laminar flame burners
* drop tube reactor
* potentiostat
* glove box
* plasma torch
* solid powder feeder
* Stirling engine

**Supporting Partners**

* CFI
* NSERC
* OCE
* Auto21
* Biofuel Net
* CMC, MITACS
* FedDev ARC
* APC

**Access Rights**

* Open for collaboration with Industry
* Please contact the lab director for more details