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