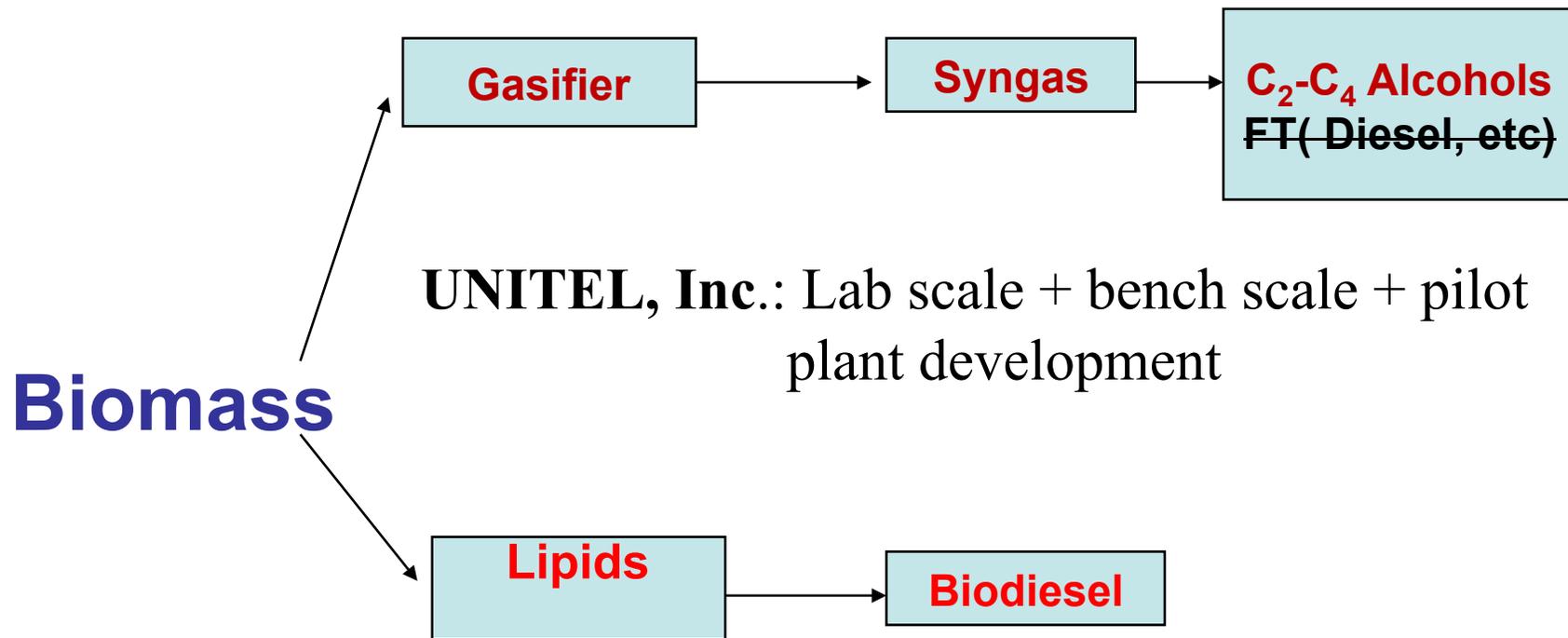


Technology Roadmap for Biofuels (P. Ratnasamy)



UNITEL, Inc.: Lab scale + bench scale + pilot plant development

Benefuel, LLC: Trans-esterification pilot plant (50 gals/day)

UNITEL, Inc. : Esterification of fatty acids
(bench scale + pilot plant development)

Renewable Energy Storage

- Cost-effective, scalable manufacturing of Li ion batteries for 10 MW or higher capacity (for solar or wind farms)
Partner - Planar Energy Devices, Inc.
- Super-capacitors
- Electrochemical production of chemicals and fuels

Smart Buildings

- Solar water heating/cooling/storage
(Sharp)
- HVAC analysis *(Lian)*
- Building information/flow system
modeling & control
(McGinley & Graham)

EDUCATION

- Wide spread interest from young students in renewable energy research due to sustainability aspects.
- Opportunity for new multi-disciplinary curriculum development!
- Conn center's manufacturing R&D facilities offer unique student and co-op training opportunities.

EARLY EXPOSURE TO A LARGE STUDENT BODY

Solar cell experiment

- Students were provided with “solar paint” (titania NPs + cranberry juice), two FTO slides and electrolyte.
- 400 freshmen made solar cells and tested them in a 45 min. class (resulted > 350 mV)



Conn Center's Impact on Kentucky's Energy Plan and Economy

- Improve the energy efficiency of Kentucky's homes, buildings, industries and transportation fleet.
- Increase Kentucky's use of renewable energy.
- Sustainably grow Kentucky's production of biofuels.
- Economic impact through high tech manufacturing jobs in renewables.

Final Slide

Holy Grail in Renewable Energy Research



Search for black magic dust!

