



PRESENTATION BY:
Pádraig Mac Suibhne

TITLE OF PRESENTATION:

Micro-reactors for Distributed Fuel Generation.

Abstract:

The presentation focuses on the challenging opportunity for reverting from CO₂ capturing and sequestration into CO₂ utilisation and fuel re-synthesis. The concept exploits existing reaction paths, such as reversed water gas shift reaction and Fischer-Tropisch synthesis to convert correspondingly CO₂ to CO and the syn-gas to olefins. It analysis several feedstock's options and discusses opportunities for bio-waste gasification products utilisation and subsequent fuel/intermediates separation options. It challenges the energy generation potential of wind power compared to CO₂ absorption from wind/air. The presentation proposes the application of micro-reactor based catalytic conversion for faster, safer, environmentally friendly, efficient and promising technology compared to large scale production. Thus it promotes the “utopian” distributed fuel generation concept. The distributed generation choice restricts the feedstock sources, but supports versatile technical solutions. The presentation discusses the scale of microreactors, their configuration in order to explore the scale-down effects and a few technical solutions for catalyst immobilization. It also presents a vision on system configuration and system integration. In parallel with sufficiently concentrated and clean CO₂, important feedstock for the fuel re-synthesis is the hydrogen. In the case of distributed generation the discussion focuses on motorcar generated hydrogen and possibility for oxy-fuelled power generation as an alternative for purer CO₂ production.

About The Presenter

Pádraig is a Mechanical Engineering Graduate from Trinity College Dublin and is Currently a PhD candidate with CPI in the University of Limerick researching the potential of Microreactor Technology for fuel re-synthesis and Distributed Fuel Generation.

DATE: 4TH December 2009
TIME: 10- 11am
VENUE: POD meeting room FG 028

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