



Energy Systems Initiative
Center for Advanced Process Decision-Making

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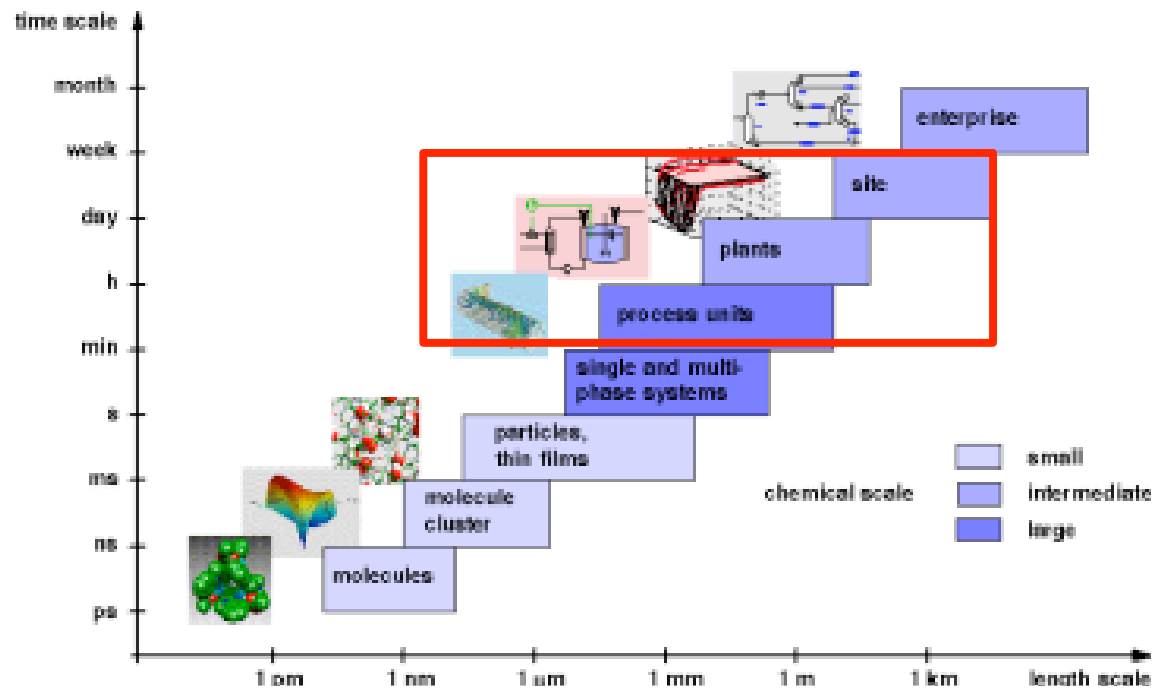
<http://capd.cheme.cmu.edu>

March, 2011

CAPD Goals

Provide intellectual leadership on complex design and operational problems faced by process industries

Science base: optimization, control, computer science, systems engineering, business



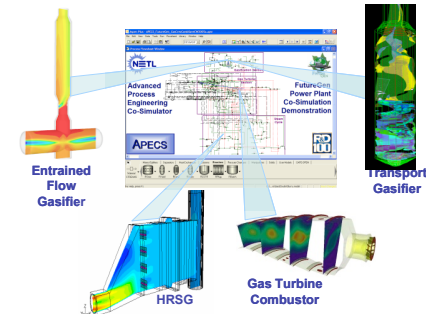
CAPD Collaboration with NETL

Interactions

- IAES → RUA: Process & Dynamic Systems Research

Objectives

- Accelerate R&D on advanced models, methods, and tools for process systems engineering
- Apply to existing and emerging fossil energy systems, such as gasification-based plants with carbon capture & storage (CCSI)
- Address technical barriers across power plant lifecycle-process innovation, design, operations, and management



APECS Co-Simulation of IGCC-CCS Plants



Next Generation Power Plants



ESI Agenda – March 5, 2011

12:30	Overview and Introduction	
12:35	<i>Advanced Process and Dynamic Systems R&D for Energy/Environment</i>	S. Zitney
12:50	<i>Overview of DOE's CCSI</i>	D. Miller
1:05	<i>Water and Energy Optimization of Biofuels</i>	I. Grossmann (M. Martin)
1:20	<i>Heat and Water Integration</i>	Linlin Yang
1:40	<i>PSA Optimization for CO₂ Capture</i>	Larry Biegler
1:55	<i>Synthesis of Integrated IGCC Systems</i>	Larry Biegler (R. Kamath)
2:10	Break	



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2:10	Break	
2:30	<i>Reduced Order Modeling for CFD Units</i>	Yi-dong Lang
2:45	<i>Dynamic RTO with Energy Pricing</i>	Ajit Gopalakrishna
3:00	<i>Modeling and Optimization for Energy Processes</i>	Nick Sahinidis
3:15	<i>Derivative Free Optimization for CO2 Capture</i>	Alison Cozad
3:30	<i>Risk assessment for CO2 sequestration</i>	Yan Zhang
3:45	<i>Silicon Solar Cell Supply Chain & PSE Problems</i>	Erik Ydstie
4:00 – 4:50	Panel Discussion and Wrap-up	