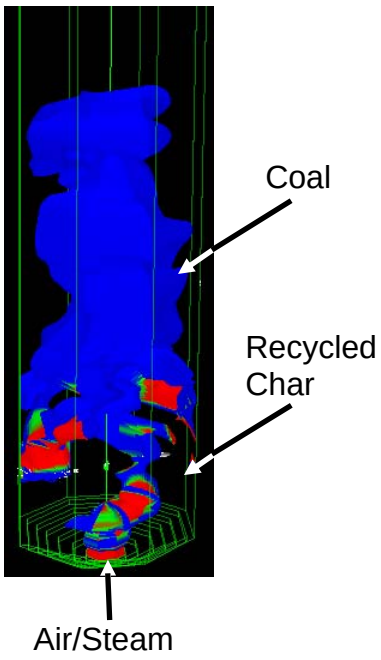
Workshop on Multiphase Flow Research
National Energy Technology Laboratory
Morgantown, WV, June 6-7, 2006

Collaboratory

National Energy Technology Laboratory (NETL) is organizing a collaboratory on multiphase flow research with the support of the three local universities West Virginia University, University of Pittsburgh and Carnegie Mellon University. The purpose of the collaboratory is to accelerate the development of multiphase simulation capability and promote its use to enhance the success of NETL's R&D investments. This will be done by developing multiphase models and software and by conducting validation experiments as identified by an analysis of the barrier issues encountered in technologies central to NETL's mission. The collaboratory will increase collaboration with other universities and external entities and leverage funding from external agencies. The net result of this program will be a suite of validated models, expanded experimental capabilities, a methodology for combining experimental data and models to analyze problem areas, and the wide-spread usage of this methodology in the design of NETL sponsored technologies. The simulation and experimental capabilities developed would be applicable to processes in power, chemical, mineral, and petroleum industries.



KBR/Southern transport gasifier: Solids volume fraction iso-surfaces colored by oxygen mass fraction

Multiphase flows occur in many energy conversion processes central to NETL's mission: gasifiers, coal combustion systems, carbon capture, FutureGen power and hydrogen production, and chemical looping combustion, for example. It is well documented that understanding and simulating multiphase flows are of critical national importance. The collaboratory is being organized to develop computational tools for solving problems encountered in multiphase flow reactors. The collaboration will allow the increasingly limited R&D investments to be used more effectively

Workshop

A workshop that brings together the experts in the area of multiphase flow is being organized as an initial step for launching the collaboratory. The workshop

vision is *to ensure that by 2015 multiphase science based computer simulations play a significant role in the design, operation, and troubleshooting of multiphase flow devices in fossil fuel processing plants*. The objectives of the workshop are the following:

- Discuss outstanding research problems in computational multiphase flow applicable to fossil fuel processing
- Develop an emerging technology roadmap for computational multiphase flow
- Develop the plans for a collaboratory based that roadmap

A *roadmap* is an extended look at the future of a chosen field of inquiry composed from the collective knowledge and imagination of the brightest drivers of change in that field – Robert Galvin, Motorola's former chairman

The main outcome of the workshop will be a report outlining the emerging technology roadmap and plans for a collaboratory for multiphase flow research. Also the workshop will improve the visibility of multiphase flow research and help influence future research solicitations.

Agenda

June 6, 2006

Time	Title	Speaker/Leader
7:30-8:15	Breakfast/Registration	
8:15-8:20	Welcome	C. Bauer (Director, NETL)
8:20-8:30	Workshop objectives and agenda	M. Syamlal (ORD-NETL)
8:30-9:15	NETL technology development direction and computational science needs	A. Cugini (Acting Associate Director, ORD-NETL)
9:15-9:45	Dense gas-solids flows and Granular flows	P. Mort (P&G), J. McCarthy (U. Pittsburgh)
9:45-10:15	Dilute Gas-Solids Flows	R. Patel (Exxon-Mobil), S. Subramaniam (Iowa State)
10:15-10:45	Break	
10:45-11:15	Liquid-solids/Gas-liquid flows	P. Ma (Air Products), R. Fox (Iowa State)
11:15-11:45	Computational Physics and Applications	R. Cocco (PSRI), C. Hrenya (U. Colorado)
11:45-12:00	Organization of tracks	Track chairs
12:00-1:00	Lunch	
1:00-2:30	Parallel technical track breakout sessions	Track chairs

2:30-3:00	5-minute track summaries to the whole group	Track chairs
3:00-3:30	Break	
3:30-4:30	Parallel technical track breakout sessions	Track chairs
4:30-5:00	Day's wrap up, information for next day	

June 7, 2006

Time	Title	Speaker/Leader
7:30-8:00	Breakfast	
8-8:15	Recap workshop objectives and day's agenda	
8:15-9:45	Presentations on the results of 4 breakout sessions and general discussion	Track chairs
9:45-10:15	Break	
10:15-10:45	Integration of technical track presentations	D. Gidaspow (IIT) and S. Sundaresan (Princeton)
10:45-11:45	Vision for a Collaboratory on Multiphase Flow Research: presentation and panel discussion	T. O'Brien (NETL), W. Rogers (NETL), M. Syamlal (NETL), R. Turton (WVU)
11:45-12:00	Conference wrap up	
12:00-1:00	Lunch (on your own)	
1:00-2:30	Discuss follow up action items; attended only by the organizing committee.	Track chairs and discussion leaders
1:00-4:00	Optional (NETL lab tour, other discussions)	

Responsibilities of participants

- Submit a 1-2 page write up on areas of research in their opinion are important to the technology development of future power plants. Ideas in the write up should conform to the workshop objectives outlined above. Also identify the research areas where the participant can make significant contributions. Please submit your response by email to the contact information given below before April 14, 2006.
- Comment on the documents posted on the website by April 28, 2006
- Participate in the discussions during the meeting
- Fill out the conference evaluation form and give it to conference chair
- Contribute to the conference report as requested by the track chairs
- Comment on the draft reports posted on the website by July 21, 2006

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