
WP 9 - Dissemination and Education

Academic Training and Student Feedback

Task 9.4, Deliverable 9.8

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Part 1 - The Course Portfolio

UCL

Training Offered

- **Materials Theory and Simulations for Engineering (Doctoral students)**

Materials for Energy and the Environment, including a lecture on Chemical Looping reactions and the issues associated with this

Online Resources

- Upon request

Participation

- 2014 (M1-M12): **17 students**
- 2015 (M13-M18): **19 students**

TUG

Courses Offered (weblink: <https://online.tugraz.at>)

- **Design of Multiphase Flow Processes / Pharmaceutical Multiphase Reactors**

Focus on multiphase flow modeling (with/without reactions), pharma applications, rheology of granular matter, and fluidized beds

- **Bachelor / Master / PhD Projects**

Focus on equipment design and software training

Online Resources

- Some courses are public, e.g.,
<http://tugtc.tugraz.at/wbtmaster/courseMain.htm?669266>

Participation

- SS 2014: **16 students**
- SS 2015: **20 students**

DCS

Training Offered (weblink: <http://www.cfdem.com/>)

- **2-day Short Course LIGGGHTS®**
Tool-specific training on a soft-sphere simulator
- **2-day Short Course CFDEM®coupling**
Tool-specific training on an Euler-Lagrange simulator

Online Resources

- LIGGGHTS® <http://www.cfdem.com/media/DEM/docu/Manual.html>
CFDEM®coupling http://www.cfdem.com/media/CFDEM/docu/CFDEMcoupling_Manual.html
Course documents handed out to participants (commercial training; free for NanoSim partners)

Participation

- 2014 (M1-M12): **18 Academia (PhD students+Post Docs) / 9 industry**
- 2015 (M13-M18): **15 Academia (PhD students+Post Docs) / 6 industry**

INPT

Training Offered

- **Modelling of gas-solid turbulent flows**
Theoretical modelling of particle-laden flows
- **Middle-term project**
Tool-specific training on numerical simulation on multiphase flow with NEPTUNE_CFD

Online Resources










- none

Participation

- 2014 (M1-M12): **~20 students**
- 2015 (M13-M18): **~20 students**

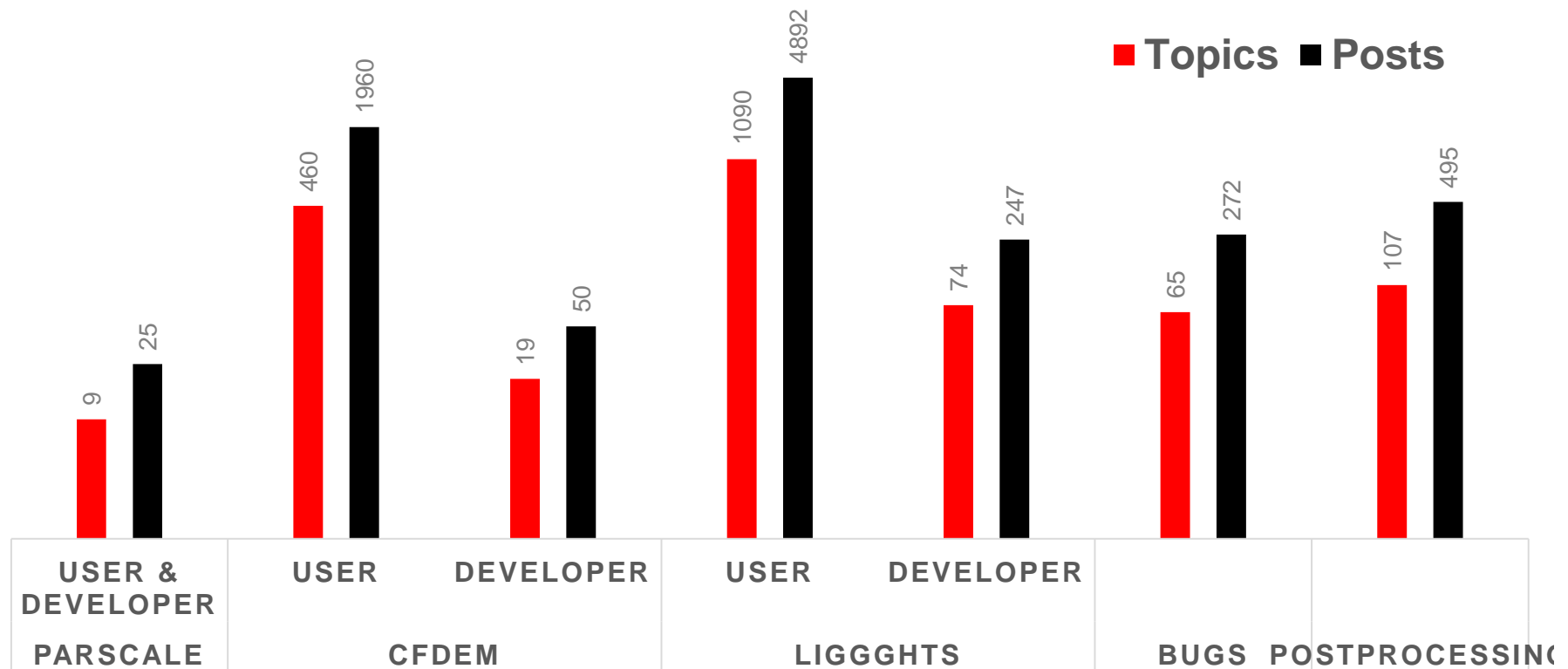
Part 2 – The Feedback

The OpenFOAM®, LIGGGHTS® and CFDEM® Forum

Forum	Topics	Posts	Last post
 ParScale - User and Developer Forum Discussions about the ParScale simulation engine go here!	9	25	By sradl1981 1 min 41 sec ago
 CFDEM@coupling - User Forum This is a forum dedicated to CFDEM@coupling using the LIGGGHTS® DEM code and OpenSource CFD.	460 9 new	1960	By ravirason1991 20 hours 42 sec ago
 CFDEM@coupling- Developer Forum Topics related to developing with CFDEM@coupling can be discussed here: discussion about implementation details, C++, MPI and debugging tools	19 1 new	50	By yyz987 3 days 18 min ago
 LIGGGHTS® - User Forum LIGGGHTS® related topics can be discussed here: discussion about models, installation, feature requests and general discussion	1090 22 new	4891	By richti83 3 hours 29 min ago
 LIGGGHTS® - Developer Forum Topics related to developing with LIGGGHTS® can be discussed here: discussion about implementation details, C++, MPI and debugging tools	74	274	By ckloss 1 week 20 hours ago
 Bug Reports for CFDEM@coupling, LIGGGHTS®, and ParScale (Possible) bugs / suspicious behavior should be reported as a new thread here, not in the user forum. This should give both you and the developers a clear idea about the status of your bug report (submitted/assigned/fixed)	65 2 new	272	By ckloss 1 week 22 hours ago
 Post Processing Post processing of LIGGGHTS®/CFDEM@coupling/ParScale based simulations is discussed here	107 2 new	495	By Daniel Queteschner 1 week 1 day ago
 CFDEM@coupling, LIGGGHTS® and ParScale - Announcements from the developers Announcements from the developers go here	129	156	By ckloss 1 month 1 week ago
 CFD and DEM - General Discussion Anything that is related CFD and DEM modelling can be discussed here	32 1 new	81	By ckloss 1 week 22 hours ago

The OpenFOAM®, LIGGGHTS® and CFDEM® Forum

- Overview (June 23rd 2015, log-scaling)

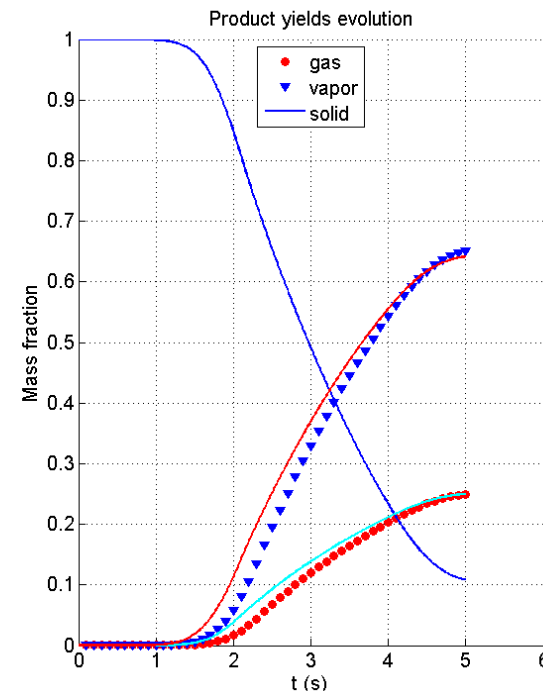
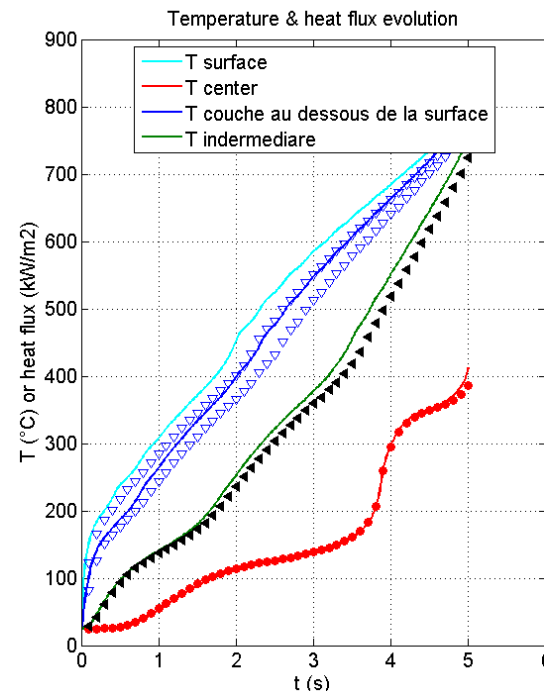


The OpenFOAM®, LIGGGHTS® and CFDEM® Forum

- **ParScale forum Activity**
9 topics, 25 posts
- **ParScale: Suggestions & Key Requests**
 - implement change of particle type
 - improvements & bug reports

The OpenFOAM®, LIGGGHTS® and CFDEM® Forum

- **ParScale Highlight** (May 19th 2015, <http://www.cfdem.com/forums/parscale-and-pyrolysis>; verification for wood pyrolysis with an de-hydratation reaction against Matlab code)



The Questionnaire

- Hosted at <http://app.feedbackr.io/#/auditor/interact/MSQNZ>
(The code is: **MSQNZ**)
- Input by **June 30th**, will close periodically (next: **July 16th, 2015**, after **LIGGGHTS & CFDEM** training)

Questions are related to:

- **Level of Study** (Bachelor / Master / PhD / Industry?)
- **Type of course**
- **How many people in the course?**
- **Quantity & quality of training material**
- **Suggestions**

The Questionnaire

- **Results (June 30th 2015)**

✓ How were you informed about NanoSim, or a tool available on the NanoSim platform (i.e., ANSYS Fluent, NEPTUNE_CFD, VASP, LAMMPS/LIGGGHTS, CFDEM, OpenFOAM, Porto, ParScale, Thermoflow, Phenom)? (Multiple Answers possible!)

<input type="checkbox"/> Lecture @ University	3 (12%)
<input type="checkbox"/> Practice / Exercise @ University	3 (12%)
<input type="checkbox"/> Project work @ University	10 (40%)
<input type="checkbox"/> Laboratory course @ University	0 (0%)
<input type="checkbox"/> Workshop for industry	0 (0%)
<input type="checkbox"/> Workshop @ University	2 (8%)
<input type="checkbox"/> Conference / Congress / fair	3 (12%)
<input type="checkbox"/> Directly via the consortium	4 (16%)

Total votes: 25

Runtime: 361h 2m 51s

The Questionnaire

- ✓ Did you attend a course / workshop / meeting that was dealing with NanoSim, or a tool available on the NanoSim platform? (Multiple Answers possible!)

<input type="checkbox"/> Yes, a course @ University	4 (24%)
<input type="checkbox"/> Yes, a workshop	8 (47%)
<input type="checkbox"/> Yes, a meeting	2 (12%)
<input type="checkbox"/> No, but I'm planning to attend such a course / workshop	2 (12%)
<input type="checkbox"/> No, and I don't plan to	1 (6%)

Total votes: 17

Runtime: 361h 2m 51s

- ✓ How many persons attended the course / workshop / meeting ? (Provide a typical number)

<input type="radio"/> less than 5	2 (13%)
<input type="radio"/> 6 - 10	8 (50%)
<input type="radio"/> 11 - 20	5 (31%)
<input type="radio"/> more than 20	1 (6%)

Total votes: 16

Runtime: 361h 2m 51s

The Questionnaire

▼ Was the quantity and quality of the training material acceptable

- | | |
|---|---------|
| <input type="radio"/> Yes | 8 (53%) |
| <input type="radio"/> Kind of (there is room for improvement) | 7 (47%) |
| <input type="radio"/> No (the material must be improved to be useful) | 0 (0%) |

Total votes: 15

Runtime: 361h 2m 51s

▼ Was the course material specific to a computational tool?

- | | |
|---|---------|
| <input type="radio"/> Yes (the material just focussed on using the software with little theoretical background) | 7 (47%) |
| <input type="radio"/> Kind of (the material focussed on using the software with some theoretical background) | 7 (47%) |
| <input type="radio"/> No (the theoretical background was at the heart of the course / workshop) | 1 (7%) |

Total votes: 15

Runtime: 361h 2m 51s

The Questionnaire

✓ Were you provided with course material? (Multiple Answers possible!)

<input type="checkbox"/> Yes, printed on paper	13 (62%)
<input type="checkbox"/> Yes, as PDF	4 (19%)
<input type="checkbox"/> Yes, in the form of a screencast	3 (14%)
<input type="checkbox"/> Yes, in some other form	1 (5%)
<input type="checkbox"/> No	0 (0%)

Total votes: 21

Runtime: 361h 2m 51s

✓ How man tutors were in the course(s) ? (Provide a typical number)

<input type="radio"/> 1	4 (27%)
<input type="radio"/> 1 - 3	8 (53%)
<input type="radio"/> more than 3	3 (20%)

Total votes: 15

Runtime: 361h 2m 51s

The Questionnaire

✓ How shall the training material be improved? (Multiple Answers possible)

<input type="checkbox"/> Increase the quantity of the training material (more details in the manual, more tutorials)	4 (16%)
<input type="checkbox"/> Increase the scientific quality of the training material (more theoretical background and references to books, papers, etc.)	5 (20%)
<input type="checkbox"/> Improve the general quality of the training material (remove typos, form of presentation, provide electronic ressources)	1 (4%)
<input type="checkbox"/> Improve the user forum	3 (12%)
<input type="checkbox"/> Make training material available online	5 (20%)
<input type="checkbox"/> Publish screencasts, e.g., on youtube	7 (28%)

Total votes: 25

Runtime: 357h 21m 48s

The Questionnaire

- ✓ Are you aware of user forums (e.g., available on www.cfdem.com) and platforms for software hosting (e.g., github)? (Multiple Answers possible!)

<input type="checkbox"/> Yes, but I do not use them	3 (12%)
<input type="checkbox"/> Yes, I actively use forums (i.e., I give input)!	5 (20%)
<input type="checkbox"/> Yes, I passively use forums (i.e., I check for possible answers to my problem)!	9 (36%)
<input type="checkbox"/> Yes, I actively use software hosting platforms (i.e., I host code)!	2 (8%)
<input type="checkbox"/> Yes, I passively use software hosting platforms (i.e., I download code)!	6 (24%)
<input type="checkbox"/> No, I am not aware of forums	0 (0%)
<input type="checkbox"/> No, I am not aware of software hosting platforms	0 (0%)

Total votes: 25

Runtime: 361h 2m 51s

The Questionnaire

✓ Which tools do you actively use

<input type="checkbox"/> ANSYS Fluent	4 (10%)
<input type="checkbox"/> NEPTUNE_CFD	0 (0%)
<input type="checkbox"/> VASP	0 (0%)
<input type="checkbox"/> LAMMPS/LIGGGHTS	14 (35%)
<input type="checkbox"/> CFDDEM	9 (23%)
<input type="checkbox"/> OpenFOAM	8 (20%)
<input type="checkbox"/> Porto	1 (3%)
<input type="checkbox"/> ParScale	4 (10%)
<input type="checkbox"/> Thermoflow	0 (0%)
<input type="checkbox"/> Phenom	0 (0%)

Total votes: 40

Runtime: 336h 30m 55

The Questionnaire

✓ In which study program are you at the moment?

<input type="radio"/> Bachelor Program	1 (6%)
<input type="radio"/> Master Program	1 (6%)
<input type="radio"/> PhD Program	11 (65%)
<input type="radio"/> Post-Doc	0 (0%)
<input type="radio"/> None (I'm in academia)	1 (6%)
<input type="radio"/> None (I'm in industry)	3 (18%)

Total votes: 17

Runtime: 361h 2m 51s