

## COST ACTION FP1005

### “Fibre suspension flow modelling - a key for innovation and competitiveness in the pulp & paper industry”

#### Minutes of the 7th Management Committee Meeting

#### Morphodynamique Continentale et Côtière, Université de Caen (Caen, FR)

24 October 2014

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#### 1. Welcome

The participants of the Management Committee (MC) meeting were welcomed by the Action Chair, Dr Cristian Marchioli. Meeting opens at 10:00.

A total of 6 participants from the following 6 Parties attended the meeting: France (FR), Germany (DE), Italy (IT), Norway (NO), Poland (PL), Portugal (PT).

With 6 of the 17 (35%) Parties having accepted the MoU to date represented at this meeting the quorum of 2/3 required under COST rules (see COST 4159/10 Annex II Art. 8) is not attained. Minutes of this MC meeting were then approved by written procedure.

The list of participants in the meeting is presented in Annex 2, their contact details can be found on the COST website at [http://w3.cost.eu/index.php?id=183&action\\_number=FP1005](http://w3.cost.eu/index.php?id=183&action_number=FP1005)

#### 2. Adoption of the MC meeting agenda

The agenda of the meeting was approved without changes or additions by the MC members.

#### 3. Minutes of the last meeting

The minutes of the 7th COST FP1005 MC meeting that was held on 05 June 2014, at the Nordic Institute for Theoretical Physics (Nordita) in Stockholm (SE) were approved unanimously.

#### 4. News from the Chair (C. Marchioli)

The Chair informed the MC about current status of the Action: up to the date of the meeting, 17 countries are included in the Action. There has been no change in the MC.

The total number of Action participants up to the date of the meeting is 167, with 67 ESRs (ESR balance is therefore 40%) and 26 females (gender balance is therefore 15.0%, -0.1% since last MC meeting). The presentation is found in Annex 3.

#### 5. Progress report of working groups

Due to the limited amount of participants, it was decided to have two WG meetings: one for WG1 and WG2 to discuss on the test case “Pressure loss evaluation in polymer and fiber laden flows” and one for WG3 to discuss the simulation activities to be performed in the last 8 months of the Action. Brief reports were given by C. Marchioli, H.I. Andersson and M.G. Rasteiro. More details can be found in the minutes of the WG meetings.

#### 6. Action planning

The Chair updated the MC about the final budget allocated for the 4th Grant Period (GP), shown in detail in Annex 3. The budget allocated for GP4 is 108,200€. The amount allocated for STSMs is above 20% of the total scientific expenditure.

#### 7. Short Term Scientific Missions (STSM)

The Chair reported on the status of STSMs up to the meeting date. The following STSM applications have been submitted and accepted during the 4th GP:

20970	<b>Rui Cesar Costa da Silva ESR</b>	University of Coimbra, Portugal	KTH Stockholm, Sweden	21.08.2014 31.08.2014	2202	Completed
21708	<b>Cristian Marchioli</b>	University of Udine, Italy	NTNU Trondheim, Norway	09.11.2014 15.11.2014	1000	Approved
					<b>3 202</b>	

50% of STSM beneficiaries are ESRs (1/2), 0% are females (0/2).

#### 8. Training Schools

##### 8.1 8.2 TS 2014 on “Particle characterization and multiphase flows monitoring”

The local organizer (Graça Rasteiro) informed the MC about the outcome of status of the TS:

- The TS was held at the Dept. Chemical Engineering, University of Coimbra, Portugal
- The total number of participants was 20: 13 trainees (all supported by Action FP1005) plus 7 lecturers (of which 5 supported by Action FP1005).
- The trainees supported by Action FP1005 will be the following:  
DEIVIDSON SILVEIRA <deiengq@yahoo.com.br>  
DEESY PINTO <deesy.pinto@dem.uc.pt>  
AHLAWAT PARAMVIR <pahlawat@student.ethz.ch>  
LAURA AGUILAR PUCHE <sacripersonal@hotmail.com>  
LETICIA FRANCO SÁEZ <leticia.franco.saez@gmail.com>  
CARLA COTAS <carlacotas@gmail.com>  
MELANIE MAYR <melanie.mayr@tugraz.at>  
MATTIA SIMEONI <mattia.simeoni@uniud.it>  
JOUNI ELFVENGREN <jouni.elfvengren@tut.fi>  
ALBA PINO PULIDO <albapinop@gmail.com>  
ROBERTO JUAN AGUADO GARCIA <[rjagarcia@ucm.es](mailto:rjagarcia@ucm.es)>  
TELMA MATIAS <tmatias@eq.uc.pt>  
SANNA HAAVISTO <Sanna.Haavisto@vtt.fi>

- Dates: June 16-18, 2014
- Lecturers:
  - From Action FP1005: Juha Salmela <Juha.Salmela@vtt.fi>; Elena de la Fuente <Juha.Salmela@vtt.fi>; Pedro Faia, <faia@deec.uc.pt>; Paulo Ferreira, <paulo@eq.uc.pt>; Graça Rasteiro <mgr@eq.uc.pt>
  - Experts: Mark Martinez <martinez@chbe.ubc.ca>
- The following topics were covered:
  - Juha Salmela is a Rheology and Process Flows Research Team Leader at the VTT Technical Research Center of Finland. His expertise is focused on rheology of complex fluids, fibre suspension flocculation dynamics and in-line measurement of rheological properties. Currently his main interests include development Optical Coherence Tomography (OCT) to study boundary layer flow properties.
  - Mark Martinez is Professor in Chemical and Biological Engineering, and a complimentary appointment in Mechanical Engineering, at the University of British Columbia. His work focuses on the understanding of the fluid mechanics of fibre suspensions with applications in the Pulp and Paper sector.
  - Pedro Faia is a Professor at the Department of Electrical Engineering and Computers of the University of Coimbra where his research interests concern the research and development of solid state chemical sensors, sensor integration techniques, Electrochemical sensor and biosensors, Impedance Spectroscopy technique and applications.
  - Elena de la Fuente is a Professor at the Chemical Engineering Department of the Complutense University of Madrid. Her main research topic is the study of the flocculation processes and floc properties, mainly in the papermaking industry and for the fiber-cement production.
  - Paulo Jorge Tavares Ferreira is a Professor of Chemical Engineering at the University of Coimbra. His scientific interests are focused on the Pulp and Paper field, addressing topics such as characterization, modification and functionalization of pulps, fibres, papers, fillers and pigments, surface sizing, nano-coating, printability, and characterization and uses of nano-celullose.
  - Maria da Graça Rasteiro is a Professor of Chemical Engineering at the University of Coimbra. She is an expert on particle technology, including particle characterization, studies of particle interaction, rheology and modeling multiphase flows. She is presently the coordinator of the Chemical Engineering Research Centre of UC.

TS webpage: [http://www.fp1005.cism.it/pages/FP1005\\_ts2014monit.html](http://www.fp1005.cism.it/pages/FP1005_ts2014monit.html)

Only one proposal was received. It is thus decided to organize only the following TS in GP4:

### **8.2 TS 2015 on “Regular and irregular non-spherical particles in laminar and turbulent flow”**

The local organizer (Prof. Martin Sommerfeld) informed the MC about the status of the TS:

- The TS will be held at the Martin-Luther Universitat, Halle-Wittenberg (Germany) in the following dates: May 18-22, 2015.
- The expected number of participants will be around 25: 20 trainees (all supported by Action FP1005) plus 5 lecturers (all supported by Action FP1005). The upper bound to the total number of participants is around 50, but it is not very likely.
- The trainees supported by Action FP1005 will be selected once the TS has been announced. The Chairman will ask for the MC approval once the list is complete.
- The following lecturers have been selected (and approved):
  - From Action FP1005: Martin Sommerfeld (Martin-Luther-Universitat Halle-Wittenberg, DE), Berend van Wachem (Imperial College of London, UK), Cristian Marchioli (University of Udine, IT),
  - Experts: Goodarz Ahmadi (Clarkson University, USA), Giovanni Paolo Romano (University of Rome “La Sapienza”, IT)
- The following topics will be covered:

- M. Sommerfeld: Numerical and experimental analysis of aggregate behavior in laminar and turbulent flow
- B. van Wachem: Large-scale modelling of gas-solid and gas-liquid flows
- G. Ahmadi: CFD modelling of complex particles in laminar and turbulent flows
- C. Marchioli: Eulerian-Lagrangian methods for small non-spherical particles in turbulent flow
- G.P. Romano: Experimental (optical) techniques for two phase flows and sprays laden with complex particles
- The lecture notes will be made available to the trainees and possibly published in the form of a book, most likely after the end of the Action.
- The TS webpage will be made available soon, both on the Action website (edited by C. Marchioli) and on the website of the local organizer.

## 9. Action's Final Conference

Following the discussion made in Stockholm during the 7th MC meeting, possible hosts and venues for the Action's final conference were further examined. In Stockholm there had been a general agreement to hold the final conference at NTNU, Trondheim (Norway). The conference would be organized jointly with the EUROMECH Colloquium on "Anisotropic particles in turbulence" (Organizers: Helge Andersson and Alfredo Soldati). This is expected to attract a larger number of participants (60 expected at least) and to help making the event more successful. The Conference dates were confirmed by Helge Andersson: 09-12 June 2015, namely after the Action's end date (May 10, 2015).

During the meeting, Prof. Harald Grossmann (not present in Stockholm) suggested the possibility to organize the final conference within the Zellcheming EXPO (website: <http://www.mesago.de/en/ZEX/home.htm>). Originally this was the annual meeting of the German paper industry but has in the meantime become one of the biggest paper related events in Europe. For 2015 this event is scheduled for June 30st to July 2nd (also after the Action's end date) in Frankfurt.

Professor Grossmann contacted Prof. Schabel from Darmstadt University who will be responsible for the content of the conference. Prof. Schabel told me that Zellcheming would be basically open for such a cooperation but that some details would have to be discussed before a decision can be made. It seems that it would not be a major problem to organise a 2 1/2 or 3 day meeting in Frankfurt in a separate room on the venue of Zellcheming 2015, while the scientific presentation could be part of Zellcheming's programme.

The Chairman will ask for approval of the following proposition: organize the final conference jointly with EUROMECH and ask for Action participants who are interested in attending Zellcheming EXPO on their own funds to organize a focus session as be part of Zellcheming's programme under the umbrella of COST at zero costs for COST.

Motivations for this proposition are the following: local organization of the event will be much easier and number of Action participants actually attending the event will be much higher if the final conference is organized jointly with the EUROMECH Colloquium. Costs are expected to be more or less the same in either case because, even if the conference will be held in Norway, no rent will have to be paid for the conference rooms at NTNU: This will more or less even the cost of flights, which will be higher in any case due to the large number of participants expected from Nordic countries.

## 10. Dissemination

### 10.1 Publications

The Chair informed the MC about the current status of publications published in the frame of the Action. Up to the meeting date and to the knowledge of the Chairman, there are 4 new publications on international ISI journals, and 5 Conference contributions, listed on the Action website. It is still planned to publish two books, each consisting of a collection of the lectures given at the TS on "Non-spherical particles and aggregates in fluid flow" and at the TS on "Collective dynamics of particles: from viscous to turbulent flows".

Papers published in international peer-reviewed journals:

- Tapio Saarinen, Sanna Haavisto, Anni Sorvari, Juha Salmela, Jukka Seppälä, "The effect of wall depletion on the rheology of microfibrillated cellulose water suspensions by optical coherence tomography", *Cellulose* 01/2014; DOI: 10.1007/s10570-014-0187-5
- Sanna Haavisto, Antti Koponen, and Juha Salmela (2014) "New Insight into Rheology and Flow Properties of Complex Fluids with Doppler Optical Coherence Tomography", *Front. Chem.* 2:27, doi:10.3389/fchem.2014.00027
- N.R. Challabotla, C. Nilsen, H.I. Andersson (2015) On rotational dynamics of inertial disks in creeping shear flow, *Physics Letters A*, vol. **379**, pp.157–162.
- B. van Wachem, M. Zastawny, F. Zhao, G. Mallouppas (2015) "Modelling of gas–solid turbulent channel flow with non-spherical particles with large Stokes numbers", *International Journal of Multiphase Flow*, vol. **68**, pp. 80–92.

#### Conference papers:

- Juha Salmela, Sanna Haavisto, Antti Koponen, Ari Jäsberg and Markku Kataja, "Rheological characterization of micro-fibrillated cellulose fibre suspension using multi scale velocity profile measurements", proceedings of 15TH FUNDAMENTAL RESEARCH SYMPOSIUM Robinson College, Cambridge, UK. 8th – 13th September 2013.
- A. Soldati "FPS COST Action FP1005 - Fibre suspension flow modelling: A key for innovation and competitiveness in the pulp & paper industry" ASME/FEDSM Meeting, Chicago (USA), August 3-7, 2014.
- M. Simeoni, M. Campolo, A. Soldati "Turbulent drag reduction by bio-polymer in large pipes" ASME/FEDSM Meeting, Chicago (USA), August 3-7, 2014.
- C. Marchioli, L. Zhao, H.I. Andersson, A. Soldati "On the relative motion between rigid fibers and fluid in wall shear turbulence" ASME/FEDSM Meeting, Chicago (USA), August 3-7, 2014.
- R. Silva, Pedro M. Faia, F. A. P. Garcia, M. G. Rasteiro "Comparison of Mixture Model Simulations with Experimental Solid-liquid Suspension Flow Data", 15th International Freight Pipeline Society Symposium 2014, Czech Association of Scientific and Technical Societies (CSVTS), Novotného lávka 5, Praha 1, Czech Republic, 24 June - 26 June 2014.

The Chairman also reminded that during the previous MC meeting it was decided (1) to publish a Book of Proceedings collecting all the contributions that will be submitted to the Action's final conference and (2) to select invited papers (among those submitted to the final conference) for a Special Issue on one international scientific journal (possible options are the Proceedings of the Royal Society A or the International Journal of Multiphase Flow, to be decided).

### 10.2 Dissemination strategies

The following strategies to advertise the Action activities will be implemented:

- Submit a short paper on the Action's scientific achievements to *Nordic Pulp and Paper Research Journal*
- Publish a review of experimental techniques for measuring fiber suspensions. The review will be edited by M.G. Rasteiro and J. Salmela. It is very likely that the review will be completed after the Action's end date (May 10, 2015), further justifying the request for an extension of the Action's duration.

### 10.3 Outreach activities

- Advertise again the Action's activities (STSMs in particular) through the Association of European Fibre and Paper Research Organisation (EFPRO). Several Action members (A. Blanco, B. Breznik, W. Bauer, H. Grossmann, J. Poranen, W. Sampson) are also involved in EFPRO and will be asked to coordinate joint activities and events.

### 11. Request for new members

The Chair informed the MC that, since the last MC meeting (Stockholm, 05 June 2014) no new application to join the Action, besides those of trainees that have attended the training schools, was received.

## **12. Promotion of gender balance and of Early Stage Researchers (ESR)**

The Chair informed the MC that the percentage of female participants is 15.0% (-0.1% with respect to the previous MC meeting). The percentage of ESRs is about 40% (+1% since last MC meeting), Promotion of gender balance and of ESRs will be pursued through training schools and STSMs.

## **13. Non-COST country participation**

The Chair informed the MC that no new applications from non-COST countries or institutions have been received at the date of the meeting.

## **14. Action website**

### **14.1 Report on current state (C. Marchioli)**

The Chair informed the MC that Knowledge Base section of the Action's website ([www.fp1005.cism.it](http://www.fp1005.cism.it)), which serves as data repository from the test case calculations, is being continuously updated with new data sets. These will come from the experimental test case carried out by WG1 and from numerical datasets from WG3.

### **14.2 Discussion on further development and content**

The Chair showed briefly the content of the website. The website will be updated continuously with useful information such as publications, scientific achievements, job opportunities, etc. The Chair has confirmed the will to continue taking responsibility of managing the website for free.

## **15. AOB**

### **15.1 Place and date of next meeting**

The MC decided that the next meeting of the Action would be:

Date	Event	Location	Justification
09-12 June 2015	Final Conference	NTNU Trondheim, Norway	Availability of meeting facilities free of charge Local organization

Local organizer will be Helge Andersson.

Scientific presentations from Action participants will be given as part of the program.

The MC decided that:

- (1) participation fees for this meeting should not exceed € 1000 for members of the Action (exceptions are only possible if well motivated)
- (2) the accommodation reimbursement rate will be € 120/night.

### **14.2 Tour de Table**

MC members presented present/future national coordination and communication activities. These will be summarized in specific reports.

## **15. Closing**

The MC meeting closed at 12:00.

Cristian Marchioli  
Chair  
COST Action FP1005

## ANNEXES

### Annex 1: Meeting Agenda

[http://www.fp1005.cism.it/downloads/FP1005\\_MC8\\_2014\\_19\\_22-24\\_Agenda.pdf](http://www.fp1005.cism.it/downloads/FP1005_MC8_2014_19_22-24_Agenda.pdf)

### Annex 2: Attendance List

NAME	STATUS	e-MAIL	NAME	STATUS	e-MAIL
Helge Andersson	MC Member Norway	helge.i.andersson@ntnu.no	Dariusz Asendrych	MC Member Poland	darek@imc.pcz.czes.t.pl
Cristian Marchioli	MC Chair Italy	cristian.marchioli@uniud.it	Maria Graça Rasteiro	MC Member Portugal	mgr@eq.uc.pt
Martin Sommerfeld	MC Member Germany	martin.sommerfeld@iw.uni-halle.de	Salaheddine Skali-Lami	MC Member France	salaheddine.skali-lami@univ-lorraine.fr

### Annex 3: Presentation of Chair



FP1005\_MC8\_Presentation.pdf

### Annex 4: TS “Regular and irregular non-spherical particles in laminar and turbulent flow”



TS-Halle.pdf