

MINUTES

18.04.2016
Prof. Álvaro Ramírez-Gómez
Dept. of Mechanical, Chemical and
Industrial Design Engineering
Technical University of Madrid
Ronda de Valencia, 3
Madrid - SPAIN
Tel.: +34 91 3366837
Fax: +34 91 3365620
alvaro.ramirez@upm.es

Annual Meeting of the EFCE Working Party “Mechanics of Particulate Solids”
18.04.2016 in Nuremberg, Germany.

Abstract

The Annual meeting of the EFCE Working Party Mechanics of Particulate Solids (WPMPS) took place on April 18, 2016, 15.00h in Room Istanbul of the Nuremberg Exhibition Centre, Nuremberg, Germany. The Meeting was held in conjunction with the 2016 PARTEC Conference.

Dr. Harald Heinrich (Schwedex + Schulze Schüttguttechnik GmbH, Germany) introduced the meeting. The WPMPS gave a warm welcome to him, Prof. Stefan Heinrich (Hamburg University of Technology, Germany), and Dr. Denis Schütz (Anton Paar GmbH), as new German and Austrian delegates respectively of the WPMPS.

Prof. Stefan Heinrich and Prof. Ramírez-Gómez dedicated some words in the memory of Prof. Jürgen Tomas and Prof. Antonio Castellanos, respectively. Prof Jürgen Tomas, German delegate of the WPMPS since 2010, left us on November 24, 2015 and Prof. Antonio Castellanos, Spanish delegate since 2008, on January 27, 2016.

Dr. David Craig (Jenike & Johanson, USA) gave a presentation titled “Silo design codes: Their limits and inconsistencies”. The presentation provided a summary with examples of the overlaps and differences in the existing design codes. Also the cases that still are not covered by any standard were reported.

Advances were presented on the current WP tasks as follows:

- 1) **K/λ Testing:** Prof. Massimo Poletto prepared an update on the k/λ project, new results obtained with the new cell at very low consolidation values were presented. The new cell is characterized by a split base and lid which define a precise vertical plane for the measure of the horizontal stresses during the application of a vertical load. Results of the new cell developed at the University of Salerno proved to be independent of the lid twisting action during consolidation at consolidation stresses higher than 5 kPa. Experiments below 5 kPa shows, instead a certain dependence of results on the twisting action and, therefore in the powder consolidation procedure. These results can be interpreted in terms of the ease of the material to reach the critical state during uniaxial consolidation.
- 2) **Validation of DEM Simulation:** Prof. Stefan Luding of The University of Twente presented a report on the advancements of the **Multiscale Analysis of multiPhase Particulate Processes (T-MAPPP)** project (<http://www.t-mappp.eu>), funded for ~4.05 million EUR. This project has received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration under grant agreement no ITN607453, for the period 2014-2018.

Prof. Álvaro Ramírez-Gómez

- 3) **Flow properties of biomass:** Prof. Sylvia Larsson provided an update of the activities related to flow properties of extreme shape particles such as solids biomass, (collaborations established and research project proposals).
- 4) **Wall friction project:** Dr Eddie Mc Gee of Ajax informed on the state of the wall friction project. Previous results showed: a) A statistical analysis of previous data with standard deviations of wall friction angles for each participant group; b) Acrylic Powder (homogeneous, hand sieved, inert) was chosen as a free flowing material. However some experiences have reported difficulties with coarser free flowing materials. Therefore, another round of tests with the fullest participation on a cohesive fine powder was agreed. Limestone (PARDEM reference powder) and Alumina were selected for the tests. Wall friction tests will be carried out using Aluminium and Stainless Steel wall samples according to the procedure followed in previous rounds of tests with the last update received the 7th of April, 2016.
- 5) **Internal friction project:** In the annual meeting held in CHISA2013 Dr David Craig of Jenike and Johanson Inc., presented some slides prepared in collaboration with Mr Tim Bell of Du Pont to highlight some issues related to the Jenike and, especially, to the ring shear tester procedure that might have been faced by the WP in order to have a greater consciousness of the scientific meaning and of the correctness of some empirical practice often carried out in the measurement procedure. Some discussion was opened at this point and the WP agreed on the necessity to identify first, which are within the WP the most used tester and for what purpose. Dr Morgeneyer has presented the results from a survey that was circulated through the WP members to shear tester users and that is available through the document stacker.

Professor Ramírez-Gómez was elected as the Chair of the WP for a second term in the period 2017-2019.

The winner of the 2016 edition of the EFCE Excellence Award in Mechanics of Particulate Solids was **Mr. Christopher Ness** with a series of excellent papers, published in conjunction with his PhD studies on “Suspension rheology and extrusion studied by discrete element simulations”.

Please note that the **next annual meeting of the WPMPS will be held in Skien (Norway) on June 2017 within RELPOWFLO V Symposium**. Precise dates of the meeting will be announced a few months before.

Prof. Don McGlinchey (Glasgow Caledonian University) and Dr Jan Nečas (VŠB-TUO - Technical University of Ostrava) were elected members.