

JMBC course : Particle Technology

April 29 – May 03, 2019, U-Parkhotel, UTwente, NL

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Short Description:

Particles can be found as granular materials in our kitchen (coffee/starch/sugar), in chemical and pharmaceutical industry (tablets/medicine/powders) in nature (sand/soil), or as solids with microstructure (ceramics/composites/metal-alloys). They are everywhere in nature and constitute over 75% of all raw material feedstock to industry – providing many challenges for innovation and fundamental science. The discrete, particulate nature of these materials leads to usually unwanted and sometimes fatal phenomena.

Particle technology is the branch of science and engineering that deals with the production, handling, modification, and use of a various particulate materials (wet or dry) in sizes ranging from nanometers to centimeters; its scope and applications span a range of industries including chemical, mechanical, petrochemical, agricultural, food, pharmaceuticals, mineral processing, advanced materials, energy, and the environment. The **purpose of this course** is to give a broad overview of most fields and applications of particle technology. Due to the broad range of particle technology, only few issues can be discussed in depth and addressed by exercises. During the course, reference will be made to various more specialized courses that are given in the near future.

Participants can be PhD students in the fields of fluid-mechanics, physics, process technology, chemical and mechanical engineering as well as geo-sciences, informatics or mathematics. However, also other researchers who want to gain a broader overview and industrial researchers and technicians will find this course interesting.

Recommended reading

M. Rhodes, Introduction to Particle Technology, Wiley

www2.msm.ctw.utwente.nl/sluding/TEACHING/ParticleTechnology2015/PT2015.html

Costs

€ 250 | Officially registered JMBC PhD students and JMBC Postdocs.

Registration fee includes: course material, lunches, 1 general dinner, 1 Excursion and (if necessary) hotel accommodation. The hotel (if necessary) will be booked and paid by the JMBC/organizers, please indicate if you need hotel accommodation during registration.

€ 400 | All other national and international PhD students, scientific staff, post docs, post-graduate students.

Registration fee includes: course material, lunches, 1 general dinner, 1 excursion.

Participants have to book their own accommodation; no reimbursement is provided by the JMBC.

€ 1000 | Staff members from industries, technological institutes or other participants.

Registration fee includes: course material, lunches, 1 general dinner, 1 excursion.

Participants have to book their own accommodation; no reimbursement is provided by the JMBC.

Hotel

The most convenient accommodation is at U-Parkhotel, where the course will take place. Please contact the hotel directly (www.uparkhotel.nl/en)

Program/Schedule

Monday April 29, 2019

- 10:30 - 11:00 Welcome, coffee, place posters ...
- 11:00 - 12:45 Intro, Basics, Particles, Contacts, incl. Exercise (S. Luding, UT)
- 12:45 - 14:00 Lunch **with poster viewing**
- 14:00 - 15:45 Powder Flow I, (Measurement, Silo-phenomenology, -design, -problems) (C. Schilde, TUBS) incl. Exercise
- 16:15 - 18:00 Powder Flow II, and Comminution Processes (C. Schilde, TUBS)

Tuesday April 30, 2019

- 09:00 - 10:45 Particle-Measurement Techniques (P. Garcia-Trinanes, Greenwich, UK)
- 11:00 - 12:45 Making particles by granulation (Industrial Applications) (G. Meesters, TUD)
- 12:45 - 14:00 Lunch
- 14:00 - 15:45 Making particles by granulation (Industrial Applications) (G. Meesters, TUD)
- 16:00 - 17:45 Synthesis technology, crystallization (H. Kramer, TUD)

Wednesday May 01, 2019

- 09:00 - 10:45 Particle-fluid systems: filtration, cyclones (P. Garcia-Trinanes, Greenwich, UK)
- 11:00 - 12:45 Advanced particle interactions and modelling (S. Luding, UT)**
- 12:45 - 14:00 Lunch
- 14:00 - 16:00 Fluid inside particles, capillarity, wetting, wicking (A. Jarray, UT)

- 16:30 **EXCURSION:** Particle & Process Technology at the GROLSCH brewery

Thursday May 02, 2019

- 09:00 - 10:45 Particle-fluid systems: fluidization, pneumatic transport (R. van Ommen, TUD)
- 11:00 - 12:45 CFD modeling of two-phase flow systems (F. Peters, TUE)
- 12:45 - 13:45 Lunch
- 13:45 - 15:30 Particle-fluid systems: continued ..., incl. exercises (R. van Ommen, TUD)
- 15:45 - 17:30 Nano-particle technology, overview (R. van Ommen, TUD)

- 19:00 **PARTICLE TECHNOLOGY DINNER**

Friday May 03, 2019

- 09:00 - 10:45 Bio-Mass, Heat-transfer, energy conversion (G. Brem, UT)
- 11:00 - 12:45 Mixing and Segregation (A. Thornton, UT)
- 12:45 - 13:45 Lunch
- 13:45 - 15:30 Particle to Granular Flow, Rheology (V. Magnanimo, UT)**
- 15:30 Conclusion/Closing

For more information contact

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