

## First European Symposium on Nanofluids (ESNf2017)

LISBON, PORTUGAL  
8–10 OCTOBER 2017

The 1<sup>st</sup> European Symposium on Nanofluids (ESNf2017) was held at the Reitoria da Universidade de Lisboa, Portugal during 8–10 October 2017. Lisbon is one of the most beautiful capitals of Europe with over 20 centuries of history and the city is also known as the sunshine capital of Europe. This symposium was organized under the auspices of the European Cooperation in Science and Technology (COST) Action “NanoUptake – Overcoming Barriers to Nanofluids Market Uptake (CA15119)”. In addition to build research and development cooperation among the participants of this COST Action, the symposium provided a platform for strong collaboration and exchange of research and ideas as well as to bring together other researchers, scientists and engineers from Europe and around the world, who are working on nanofluids and related areas. Numbers of related companies were also participated in the symposium. The symposium concentrated mainly on fundamentals and applications of nanofluids and liquid-based nanocomposites, which include following topics:

- Nanofluids – heating and cooling
- Nanofluids – thermal storage
- Nanofluids – boiling and solar energy
- Preparation and properties of nanofluids
- Applications of nanofluids
- Molten salts based nanosystems
- NanoPCM
- Ionanofluids
- Other areas of nanofluids

In addition to European participants there were participants from USA, Japan, Korea and Brazil. This symposium featured plenary and invited lectures as well as regular oral and flash presentations. All submitted extended abstracts were carefully reviewed before accepting for the symposium and an “Abstracts Collection” of more than 300 pages was published both in hardcopy and electronic copy (ISBN: 978-972-96653-5-6).

All accepted abstracts were classified under different topics and most of them were based on NanoUptake work groups’ topics. The technical sessions were



Figure 1: Participants at the symposium.

based on these topics as well as on nanofluids preparation, stability, optical and other properties, and numerical simulations. Apart from two single sessions for one plenary and two invited lectures, there were total 13 sessions including 10 parallel sessions and most of the sessions started with invited lectures. Each technical session was chaired by a leading researcher of the area and most of session chairs were from NanoUptake working group leaders and vice-leader. Besides a plenary lecture, there were total 10 invited lectures, 54 regular presentations and 2 flash presentations. A brief summary of each session of the symposium is provided below:

■ Opening and an invited lecture (Chair: Carlos Nieto de Castro). This session took place on Day 1 with the opening speech by José Manuel Rebordão, subdirector, Faculdade de Ciências da Universidade de Lisboa (FCUL), Portugal. After the inauguration of the symposium the first invited lecture on nanofluids research trends was given by José Enrique Juliá, NanoUptake co-ordinator, Universitat Jaume I, Spain.

■ Plenary and invited lectures on nanocolloid and ionanofluids (Chair: José Enrique Juliá). This session started at the morning of Day 2 with the plenary lecture on the interactions between nanoparticles by Paul Luckham from Imperial College London, UK followed by an invited lecture on the influence of nanotubes and graphene interactions with ionic liquids by Carlos Nieto de Castro from FCUL, Portugal.

■ Heating of nanofluids (Chair: Luis Lugo). This was one of the first parallel sessions on Day 2 morning and it started with an invited lecture on investigation on convective heat transfer of magnetic nanofluids under magnetic field by Oronzio Manca from Università degli Studi della Campania “Luigi Vanvitelli”, Italy followed by six regular oral presentations on various heating related areas of nanofluids.

■ Cooling of nanofluids (Chair: Bengt Sundén). This session began with an invited lecture on cooling with nanofluids by S. M. Sohel Murshed from FCUL, Portugal followed by six regular presentations on various cooling related areas particularly on experimental studies on convection heat transfer of nanofluids.

■ Heating and others areas of nanofluids (Chair: Paul Luckham). This post-lunch parallel session on Day 2 started with an invited lecture on Heat transfer assessment of nanofluids by William Wakeham from Imperial College London, UK followed by six regular presentations on heating and thermophysical properties of various nanofluids.

■ Cooling and others areas of nanofluids (Chair: S. M. Sohel Murshed). This session started with an invited lecture on an Horizon 2020 project (MAGENTA- Magnetic nanoparticle based liquid energy materials for thermoelectric applications) by Sawako Nakamae from SPEC,

CEA, CNRS, France followed by six regular presentations on convection cooling in heat exchanger and thermo-physical properties of nanofluids.

■ Thermal storage of nanofluids (Chair: Carlos Nieto de Castro). This parallel session on Day 3 morning started with an invited lecture on thermal energy storage using composite phase change materials (PCMs) by Yulong Ding from Birmingham Centre for Energy Storage, University of Birmingham, UK followed by four regular presentations on thermal storage, PCMs, molten-salt and heat capacity of nanofluids.

■ Boiling heat transfer and applications of nanofluids (Chair: Elisa Sani). This session began with an invited lecture on heat transfer of nanofluids in heat pipes and thermosyphons by Matthias Buschmann, ILK Dresden, Germany followed by four regular presentations on thermosyphon and pool boiling heat transfer of nanofluids.

■ Optical properties and others areas of nanofluids (Chair: Manuel Matos Lopes). This session had six regular presentations on PCMs, optical, transport and dielectric properties of nanofluids.

■ Solar application of nanofluids (Chair: Matthias Buschmann). This session also had six regular presentations mainly on the topic of this session.

■ Stability, thermal conductivity and others areas (Chair: William Wakeham). This is one of the last post-lunch parallel session on Day 3 and it started with an invited lecture on the validation of nanofluids by Maria Lourenço from FCUL, Portugal followed by five regular presentations and one flash presentation on the topics of this session.

■ Numerical studies and others areas of nanofluids (Chair: Antonio Moreira). This session started with an invited lecture on issues in convection modeling of PCM by Gennady Ziskind from Ben-Gurion University of the Negev, Israel followed by five regular presentations on numerical studies mostly on convection heat transfer and one flash presentation on nanofluids in a solar thermal collector.

Each lecture and presentation completed with very good discussion and Q&A. The main issues that were highlighted from the discussions and Q&A of all lectures and presentations include properties, application barriers, and other areas particularly on stability and rheological characteristics of nanofluids. Since the symposium was organized as an event of NanoUptake COST action (CA15119) and its working groups' meetings were also took place at the end of symposium's sessions on Day 2 and Day 3, it is important to briefly introduce this COST action. NanoUptake aims to create a Europe-wide network of leading Research, Development and Innovation institutions, and of key industries, to develop and foster the use of nanofluids as advanced heat transfer/

thermal storage materials to increase the efficiency of heat exchange and storage systems. Nanofluids, which is a new class of heat transfer fluids are specifically mentioned in the Strategic Energy Technology Plan and the Materials Roadmap to enable Low-Carbon Technologies as potential elements to improve the efficiency of heat exchange and thermal energy storage systems. By developing nanofluids up to higher Technological Readiness Levels (TRL) and overcoming commercial application barriers, Nanouptake is to contribute to achieve the European Horizon 2020 Energy and Climate objectives (Societal Challenges 3: Secure, efficient and clean ener-

gy; and 6: Climate action, environment, resource efficiency and raw materials). Details of this COST action can be found on its website ([www.nanouptake.eu](http://www.nanouptake.eu)).

At the end of the symposium it was decided that the next edition of this European symposium on nanofluids will be combined with its first international conference and will be held in Castellón, Spain in 2019.

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## 33<sup>rd</sup> International Conference of The Polymer Processing Society (PPS-33)

CANCUN, MEXICO  
 DECEMBER 10 – 14, 2017



The 33<sup>rd</sup> international conference of the Polymer Processing Society (PPS) was held in the city of Cancun, Mexico from 10 to 14<sup>th</sup> December 2017, the venue for this conference was the Grand Fiesta Americana Coral Beach Hotel. The PPS holds two annual conferences, one international and one regional. The international conference alternates locations from three major geographic locations Americas, Europe/Africa and Asia/Australia. This was the first time that this conference was held in Mexico and it was co-organized with the Mexican Society of Rheology. The conference is dedicated to all fields of polymer processing comprising all formulation, conversion and shaping operations applied to polymers to produce commercial products. In this occasion there were 20 different symposia: 16 general symposia and four special symposia.

The conference was attended by participants from 44 different countries. 499 abstracts were accepted in the conference: 29 keynotes, 290 oral presentations and 180 posters. Additionally, 7 plenary talks were presented during the conference, 2 of these plenary talks corresponded to awards granted by the PPS: the Morand Lambra award and the James L. White Innovation award. The Morand Lambra award recognizes an outstanding young researcher who has made major contributions to the field of polymer processing. This time the award was

granted to Bryan D. Vogt from the University of Akron. The James L. White innovation award honors outstanding researchers from both academia and industry for innovative development in the field of polymer processing technologies with commercial impact. In this occasion, Phil Coates from the University of Bradford was granted this award for the development of solid phase orientation processing routes. Another award (early career award) was granted to Jiahua Jack Zhu from the University of Akron who had the honor of presenting a keynote as a part of the award.

The scientific program activities were carried out during the 4 days of the conference (Monday to Thursday) in which 2 plenary talks were presented each day, one in the morning and one in the afternoon except for the last day (Thursday) in which only one plenary talk was presented. The plenary speakers included Masami Okamoto from the Toyota Technological Institute who talked about biocomposites of natural rubber latex and living tissue. Liqun Zhang from Beijing University of Chemical Technology presented some important simulated results of elastomer nanocomposites (ENCs) achieved via molecular dynamics simulation. Chul B. Park from the University of Toronto gave information of modern foaming technologies that use crystals to control foam processing. Marcelo Farah from Braskem com-