



At Cologne, the Institute of Materials Physics in Space of the German Aerospace Center DLR hosted an International Summer School on Aerogels from 6<sup>th</sup> to 8<sup>th</sup> of October 2010.

The Summer School was attended by European students, scientists and experienced industrial researchers. The participants came from all over Europe: Russia, Slovenia, Great Britain, Estonia, Switzerland, Italy, Turkey, Austria and Germany.

The Summer school combined oral lectures and extensive laboratory work such that the participants get a concise knowledge about aerogels. Top-ranking scientists in the field of aerogels gave the oral presentations and the laboratory techniques were supervised and guided by their skilful co-workers.



The first day started with an oral presentation of Prof. Nicola Hüsing from the University of Salzburg (Austria). She gave a general overview about the “Synthesis of Aerogels”. It was followed by a laboratory section and closed with the presentation about “Flexible Aerogels” of Dr. Ramaswamy Aravind, who is working as a post-doctoral researcher at the University of Trento (Italy).

At the second day Dr. Gudrun Reichenauer from the Bavarian Center for Applied Energy Research, Würzburg (Germany) discussed in her presentation about “Characterisation of Aerogels” many techniques applied in the literature to characterize structure and properties of aerogels with a focus on the techniques to be used by the participants in the lab.

The third day focused on technical applications of aerogels. Prof. Irina Smirnova from the Technical University Hamburg-Harburg (Germany) provided an insight on “Applications of Aerogels in Life Science” with a focus on aerogels as drug delivery substances.

Prof. Lorenz Ratke, vice director of the hosting Institute of the German aerospace center finalized the theoretical excursions with his presentation of “Aerogels - Materials for a huge variety of applications”.

The 35 participants worked in teams of 4-5 members in the laboratory at seven different stations to put the theoretical lectures into practice and to learn the beauty of aerogels hands-on.

The participants synthesized organic aerogels, Silica and Zirconia aerogels. The aerogels were either dried at ambient conditions or supercritically using CO<sub>2</sub> in a continuous process leading to dry aerogels in a day. The aerogels were characterized by thermogravimetry with FTIR, nitrogen adsorption (BET, BJH), pycnometry, gas permeability, thermal conductivity (HotDisk) and mechanically (bending and compression test).



All results of the laboratory work were presented by the teams in a short presentation during the last day, which was a joyful event and revealed that the summer school was a stimulating experience for everyone and might have acted as a seed for future work on these materials. As a social program an Italian dinner was served at the first evening within the rooms of the DLR school-lab. The participants could enjoy the delicious food and get in contact for networking. The second evening was open for a Cologne sightseeing trip. The Summer School was sponsored by Micromeritics and DLR board of directors, such that participation fee for especially the student participants could be kept rather low.

The organization team is really satisfied about the feedback and the results of this year's Summer School.



Team of Organisation:

Prof. Dr. Dr. Lorenz Ratke

Dr. Barbara Milow

Dr. Kathleen Heinrich

Institut für Materialphysik im Weltraum

Deutsches Zentrum für Luft- und Raumfahrt In der Helmholtz-Gemeinschaft Linder Höhe

51147 Köln

email: [Lorenz.Ratke@dlr.de](mailto:Lorenz.Ratke@dlr.de)

email: [barbara.milow@dlr.de](mailto:barbara.milow@dlr.de)

email: [kathleen.heinrich@dlr.de](mailto:kathleen.heinrich@dlr.de)

Web: <http://www.dlr.de/mp>