

Dear members of the Materials Chain,

During the first months of 2017, the flagship program Materials Chain took several steps to further strengthen the research activities at the three UA Ruhr universities in the field of materials science.

The newly established Research Hubs took on a more concrete shape as centres of competence with the organization of the first two scientific workshops, Gas-phase Synthesis of Functional Nanomaterials and Modelling and Simulation of Superalloys. Both workshops took place in March 2017 and were dedicated to HUB-specific topics. Information on the four HUBs can now be found on the Materials Chain's website under Research. Another significant measure towards forming a strong research alliance was taken by handing in the draft proposal for a joint cluster of excellence "Materials Chain Ruhr" to the DFG, an initiative coordinated by G. Eggeler, C. Schulz and E. Tekkaya.

The bibliometric study launched to analyze the Materials Chain's position and perception within the international science community has been concluded. A detailed report on the study's findings and procedure is given below, together with a short summary of the Materials Chain's achievements at the annual Hannover Messe, which took place in April.

With the bibliometric study as a basis, a trend study is currently ongoing to identify and assess major future trends in materials science and to clarify in which way the Materials Chain members may form a critical mass to work on the most substantial research topics to come in the following years.

The next months will also be dedicated to strengthen continuously the scientific exchange within the Materials Chain through a series of seminars and workshops. An overview of already scheduled events can be found on our website.

We welcome 5 new members to the Materials Chain program. Names and links to their personal websites can be found below.

Best regards,
Your Materials Chain Coordinators
(Ralf Drautz, Jörg Schröder und Wolfgang Tillmann)

UPCOMING Events

18.05.2017

Vom Partikel zur komplexen Struktur
CENIDE SCIENCE TALK,
Universität Duisburg-Essen

10.07.2017

10 years University Alliance
Ruhr FESTAKT,
Jahrhunderthalle Bochum

29.08.2017

24th International Workshop on
Industrial Crystallization
WORKSHOP, TU Dortmund

More...



Please feel free to download the Materials Chain Logo for usage on your own website.

New members

Fleurianne Bertrand, Numerical Mathematics, Universität Duisburg-Essen

Rolf Breitenbücher, Building Material Technics, Ruhr-Universität Bochum

Sebastian Henke, Inorganic Chemistry, TU Dortmund University

Tong Li, Institute for Materials, Ruhr-Universität Bochum

Yujiao Li, Institute for Materials, Ruhr-Universität Bochum

Bibliometric Study

A profound bibliometric study was commissioned by the Forschungszentrum Jülich in order to answer the two significant questions "Where is the Materials Chain currently positioned?" and "How does it have to align itself thematically in the future?". Publications by all Materials Chain members listed in the two big literature databases *Scopus* and *Web of Science* within the last five years were analyzed based on two evaluation criteria: firstly, papers were assessed concerning their scientific excellence and their international visibility. Secondly, topics and networks in which the Materials Chain is involved were scrutinized. The study has impressively demonstrated that a large part of the contributions were published in renowned and peer reviewed journals with great scientific importance. It was also found that the Materials Chain members have comprehensively contributed to the international research in the fields of materials science and production engineering so far, publishing more than 7.500 journal articles between 2011 and 2015.

The study concluded that the scientific perception of the Materials Chain in the international science community could be deemed as "very good" or even as "exceeding the expectations". Thus, the Materials Chain's capability to compete with other prestigious and long-established universities was proven. A content analysis of the publications revealed relevant research competencies and thematic clusters such as nanotechnology, scale-bridging simulation, materials synthesis, and production technology. The Materials Chain occupies a leading position both nationally and internationally in these research areas. For further information on and detailed results of the bibliometric study, please contact mc@uaruhr.de.

Workshops, Conferences and Events

The Materials Chain at the Hannover Messe 2017

The Hannover Messe is one of the largest and internationally most renowned annual industrial fairs in the world where companies and research institutes present the newest industrial trends. Approximately 6.500 exhibitors from more than 70 countries presented themselves in Hannover this year, among them the Materials Chain, which participated for the second time. The expert audience marveled at the numerous exhibits from the manifold engineering research areas of the three universities of the Materials Chain. Especially the ferrofluid well amazed many fair visitors with its distinctive shape and initiated numerous discussions. Other exhibits such as a fuel cell vehicle, structured thin film elements, as well as an interactive NiTi-shape-memory alloy actor model generated great interest and reflected the expertise of the institutes involved in the Materials Chain. This was further true for prototypes made of vulcanized fiber, a novel lightweight structural



material made from recycling products, which can be used as an alternative to plastics and aroused a lot of interest with industrial visitors.

Interesting networking conversations with other scientific institutes as well as with representatives from the industry speak for the overall successful appearance of the Materials Chain at the Hannover Fair 2017 and helped to make the program more visible beyond the borders of North Rhine-Westphalia and Germany.

Materials Chain exhibits at Hannover Messe 2017



Dr. Martin Grünewald, Secretary of State NRW and Dr. Marion Franke, Materials Chain at the Hannover Messe 2017. © punktgenau GmbH

Publication Highlights

Optically excited structural transition in atomic wires on surfaces at the quantum limit

T. Frigge, B. Hafke, T. Witte, B. Krenzer, C. Streubühr, A. Samad Syed, V. Mikšić Trontl, I. Avigo, P. Zhou, M. Ligges, D. von der Linde, U. Bovensiepen, M. Horn-von Hoegen, S. Wippermann, A. Lücke, S. Sanna, U. Gerstmann, and W. G. Schmidt, NATURE, Volume: 544 Pages: 207-211 (2017)

Revealing the subfemtosecond dynamics of orbital angular momentum in nanoplasmonic vortices

G. Spektor, D. Kilbane, A. K. Mahro, B. Frank, S. Ristok, L. Gal, P. Kahl, D. Podbiel, S. Mathias, H. Giessen, F.-J. Meyer zu Heringdorf, M. Orenstein, and M. Aeschlimann, SCIENCE, Volume: 355 Pages: 1187-1191 (2017)

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