GERMANY

Review: AM Ceramics 2016

Additive Manufacturing (AM) has developed into one of the most promising fields of innovation in the producing industry. The available manufacturing systems for ceramics have already reached an advanced stage and represent a real alternative and sensible addition to traditional manufacturing methods. Many companies today stand before the challenge of gauging the opportunities and risks that AM of ceramics holds for them. There is a huge need for relevant information and clarification for these companies to take further steps. Many questions are thrown up, such as what experience have those companies already working with the process had and how should companies address AM in future? For these reasons, Lithoz GmbH/AT, supported by the DKG – German Ceramic Society and the DKG Szene Additiv, Bayer Innovativ, the New Materials cluster and the trade media 3Druck.com, CERAMIC APPLICATIONS and cfi/Ber. DKG, issued an invitation to the 1st Seminar "AM Ceramics 2016" in Nuremberg on 26–27 September 2016.

More than 80 participants from industry and research followed this invitation to get a deeper insight into the possibilities for application, special features and the potential of AM. The focuses of the seminar comprised the basic principles of as well as the economic and technical aspects concerning additive manufacturing of high-performance ceramics for industry and research that are relevant to decision-making.

Essential for the success of AM ceramics were the high-calibre expert talks, which provided a good overview of the possibility for application, research and development trends, special aspects and the potential of AM of ceramics.

The two-day seminar was introduced with papers presented by Prof. Dr Jens Günster (Germany's Federal Institute for Material Research and Testing/DE), Dr Tassilo Moritz (Fraunhofer IKTS/DE) and Dr Guido Falk (University of the Saarland/DE), which provided an overview of AM processes for ceramic and a comparison to conventional processes.

With the moderation of Dr Guido Falk, company experts such as Norbert Müller (LAPP Insulators Alumina/DE), Dr Marius Lakomiec (EOS GmbH/DE) and Alexander Hilgenberg (Steinbach AG/DE) reported on the use of AM systems in company practice. Here, the focus was on the economic aspects of technology and the speakers showed how companies can

Fig. 1
Dr Johannes Homa, CEO Lithoz, during his presentation

Fig. 2
Dr Guido Falk, who moderated the two-day seminar

apply the new technology profitably and what applications are particularly suitable for additive manufacturing.
Another focus of the seminar was design for AM of ceramics. Uwe Scheithauer (Fraunhofer IKTS) presented a series of complex components that showed the wide-ranging design possibilities of AM. Besides the saving of assembly costs, the new designs primarily offer an increase in component functionality. Prof. Dr Franz Weber (University Hospital of Zürich/CH) informed attendees about the advantages of AM specifically for bone replacement.
Besides the new design possibilities, the limitations of additive manufacturing were pointed out. Talks on this topic were presented by Joachim Vogt (Fraunhofer HTL/DE) and Florian Kleusch (Lithoz GmbH).
Finally, Dr Christian Potzernheim-Zenkel (Bayern Innovativ/DE) and Mag. Johannes Gartner (3Druck.com) informed attendees about the latest developments and future prospects for AM of ceramics.
With his paper on innovation management, Mag. Wolfgang Römer (FH St. Pölten/AT) inspired many attendees to leave the beaten path and look at AM of ceramics from a completely different perspective.
Besides the expert papers, the attendees were given ample opportunity to exchange information and network. Dr Johannes Homa, Technical Director of the seminar, was visibly delighted about the success of the event: "The great interest in the event has shown that the AM community is growing in ceramics and there is a great demand for relevant and sound information. We are planning on staging the seminar next year and to offer the community a fixed event for accumulating and transferring information."

Fig. 3
The 1st seminar "AM Ceramics 2016" in Nuremberg with over 80 attendees from industry and research was a success

Fig. 4
Great demand of information in front of the Lithoz plant set up in the seminar room ...

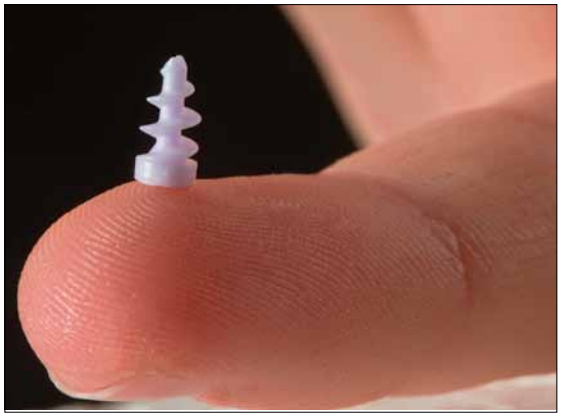

Fig. 5
... which was used during the two-day for AM of Al_2O_3 screws