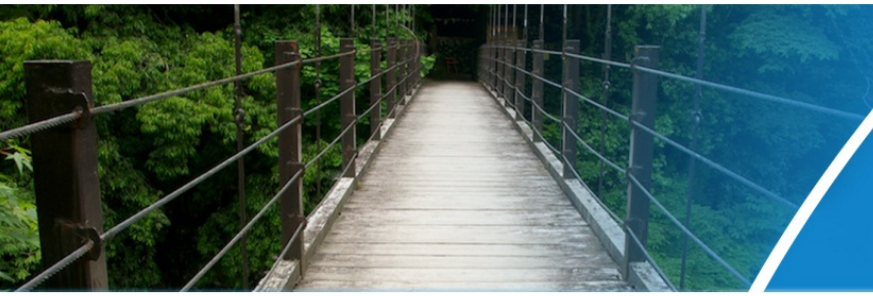

THE BRIDGE

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Customer in the Spotlight

Dr. Jozef Keckes

Associate Professor
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Dr. Keckes is a well-recognized scientist in the field of X-ray diffraction characterization of nanocrystalline thin films and coatings as well as biological materials like wood. He has more than 130 papers registered in the Science Citation Index and his publications receive about 350 citations per year.[1)-3)] He works not only in the field of materials characterization but concentrates also on the development of novel in-situ laboratory and synchrotron X-ray diffraction techniques to analyze structure-property relationship in nanomaterials. One of the best examples of his activities is the co-development of a domed hot stage together with AntonPaar.[4)-5)] As most readers may remember, AntonPaar's domed hot stage was the first high temperature chamber available on the market with a unique X-ray transparent domed cover which regulates both the temperature and environment inside the chamber. The dedicated design allows characterization of samples in the whole orientation space, which is a required feature in thin film applications like high-temperature texture or residual stress analysis.

Dr. Keckes saw the SmartLab diffractometer for the first time in 2010 at the Denver X-ray Conference. Simultaneously, he was impressed by a poster presentation (which won the prize for the best poster) entitled "In-plane and conventional pole figure measurements" given by application scientists,

Erina Kagami and Aya Takase from Rigaku Corporation Tokyo.[6)] Dr. Keckes commented that "I was impressed to see the movement and possibilities of a 5-axes goniometer implemented in the SmartLab and decided to wait until Rigaku brought a demo instrument to the European market". And he was the first customer who came to the application laboratory in Berlin, Germany to evaluate the device. After obtaining the demonstration from Dr. Keiseke Saito, the SmartLab with in-plane arm was installed in spring 2012 at Montanuniversität Leoben in Austria. Dr. Keckes is currently working with Rigaku Corporation's development team to implement his scientific ideas on the SmartLab in order to "fully explore the possibilities of the 5-axis system". One of the first results from the SmartLab in his laboratory, the implementation of an in-plane sin2ψ technique, will be presented this year (2013) at the Denver X-ray Conference[7)].

Click here for more information about the Rigaku SmartLab

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3) In situ high temperature X-ray diffraction reveals residual stress depth-profile in blasted TiN hard coatings, M. Bartosik, R. Pitonak, K. Keckes, Advanced Engineering Materials, 13 (2011) 705-711.

4) AntonPaar's DHS 900: http://www.anton-paar.com/Domed-Hot-Stage-for-Four-Circle-Goniometers-DHS-900/XRD/60_Corporate_en?product_id=132

5) AntonPaar's DHS 1100: http://www.anton-paar.com/Domed-Hot-Stage-for-Four-Circle-Goniometers-DHS-1100/XRD/60_Corporate_en?product_id=133

6) In-plane and conventional pole figure measurements, E. Kagami, A. Takase, 2010 Denver X-ray Conference proceedings.

7) 2013 Denver X-ray Conference: http://www.dxcicdd.com/13/index.htm

