



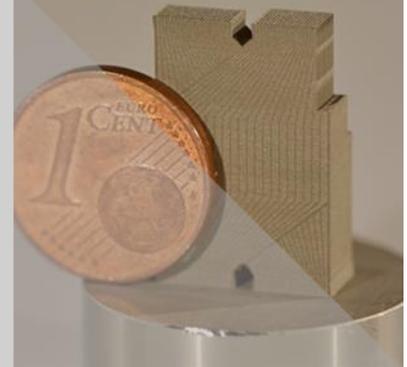
**UNIVERSITA
NICCOLO' CUSANO**

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10.00 – 12.30
Room T



New Trends in Laser Material Processing

Dr. Jörg Schille & Mr. Matthias Horn



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On behalf of the University of Rome Niccolò Cusano, under the aegis of the Laserinstitut Hochschule Mittweida, we are very glad to invite you to the Seminar on “New Trends in Laser Material Processing”, which will be held at the University of Rome Niccolò Cusano, in Rome on the 17th of October, 2018.

In this seminar, new trends in laser material processing will be presented with special focus on laser micro and nano processing, high-rate laser machining and additive manufacturing. In the first part, research activities in laser micro and nano processing will be presented, including fabrication of (sub)micro scale features on metallic surfaces produced to enhance their functional performance. The dependencies of the laser processing parameters on the structural characteristics of the emerging surface features will be briefly discussed. It will also be shown that, inspired by nature, laser-textured surfaces possess a high potential for numerous innovative technical applications and products. As already known for butterfly, lotus leaf, shark skin or rather gecko foot in nature, here enhanced functionality of laser textured surfaces will be presented by machining examples, such as Ripples for multifunctional optical surfaces, water-repellent surfaces for self-cleaning, higher static friction to increase efficiency of tribological contacts, or Riblets to reduce skin-friction drag for energy savings in aero- and hydrodynamic systems. The second part of the seminar provides technical insights into high-rate laser machining. This high-speed machining technology combines powerful lasers and ultrafast laser beam deflection and was developed in Mittweida for large-area and high-throughput laser processing. In fact, high-rate laser machining seems to be the key to bring innovative laser processes to industrial production with the potential to substitute standard manufacturing technologies in modern micro fabrication. Finally, a short introduction into additive manufacturing using pulsed and continuous wave laser radiation will be given. At the Laserinstitut Hochschule Mittweida, Selective Laser Melting (SLM and μ SLM), Laser Micro Sintering (μ SLS) as well as Laser Micro Cladding are main research topics in this field. The advantages and limitations of the different technologies will be discussed by means of machining examples ranging from macro to micro-scaled dimensions.

Acknowledgments

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