RUHR-UNIVERSITÄT BOCHUM

RUB

Chair of Atomic-Scale Characterisation
Fakultät für Maschinenbau

VORTRAG

Prof. Dr. Jing Fu

Monash University, Australia

Nanofabrication for imaging and learning in biological systems

Ort: ZGH 03-121

Termin: 19.06.2024, 15:00 – 16:00 Uhr

Abstract:

Our research focuses on employing Focused Ion Beam (FIB) and Atom Probe Tomography (APT) to investigate the atomic and molecular signatures in biological systems. We will first present how to tune various materials using charged particle beams to fabricate unprecedented 1D and 3D nanostructures. The fundamental insights into dynamics provide knowledge for precisely controlling these nanostructures across a wide spectrum of applications. Additionally, we explore new routes for APT imaging, including the use of graphene coating to 'disguise' the surface of insulated and biological samples. Successful APT imaging of biological targets, such as antibiotic-resistant bacteria (superbugs) and proteins, provides us unique atom-by-atom views. New opportunities for adding laser micromachining to achieve high-throughput imaging will also be discussed.

Bibliography:

Dr Jing Fu obtained BEng from Shanghai Jiao Tong University, MPhil from the Hong Kong University of Science and Technology, MEng (2007) and PhD (2008) from The Pennsylvania State University, University Park, USA with a focus on manufacturing engineering and microfabrication. In 2008, he was awarded a postdoctoral fellowship from the U.S. National Institutes of Health (NIH), to continue his research and specialised biology training at NIH Bethesda, Maryland campus. During the course of the fellowship, Dr Fu explored a number of "world first" projects including 3D FIB-SEM tomography of virus-cell interfaces, and cell imaging with APT. Dr Fu is currently an Associate Professor in the Department of Mechanical and Aerospace Engineering, Monash University, Australia which he joined in 2010.