

Session 3: Biological Samples

Date: **Tuesday 3 August**
Time: **1:30 PM - 3:10 PM**

Session Chair: **Stephen W. Wilkins**, Commonwealth Scientific and Industrial Research Organisation (Australia)

Synchrotron-based time-resolved vector tomography of the lungs (*Invited Paper*)

Paper 7804-11

Author(s): Robert A. Lewis, Andreas Fouras, Marcus Kitchen, Stuart Hooper, Monash Univ. (Australia)

[Show Abstract](#)

Micro-morphology of biological tissues (*Invited Paper*)

Paper 7804-12

Author(s): Bert Müller, Shpend Mushkolaj, Therese Bormann, Georg Schulz, Basel Univ. Hospital (Switzerland); Julia Herzen, Felix Beckmann, GKSS-Forschungszentrum Geesthacht (Germany)

[Hide Abstract](#)

The present communication deals with the morphological characterization of porcine and sheep urethras on the micrometer scale taking advantage of micro computed tomography in absorption and phase contrast modes. So far, histology was the only technique applied to obtain the microstructure of urethral tissue. Three-dimensional studies, based on micro computed tomography, are unknown. Nevertheless, the micro-morphology of the urethra is of utmost importance to understand how the muscles close the urethra to reach continence. As the number of incontinent patients is steadily increasing, the function under static and stress conditions has to be uncovered for the realization of artificial urinary sphincters.

Ex vivo and in vitro synchrotron-based micro-imaging of biocompatible materials applied in dental surgery

Paper 7804-13

Author(s): Alexander Rack, European Synchrotron Radiation Facility (France); Michael Stiller, Katja Nelson, Christine Knabe, Tatjana Rack, Charité Universitätsmedizin Berlin (Germany); Simon Zabler, Technische Univ. Berlin (Germany); Olaf Dalügge, Charité Universitätsmedizin Berlin (Germany); Heinrich Riesemeier, Jürgen Goebbels, Bundesanstalt für Materialforschung und -prüfung (Germany)

[Hide Abstract](#)

Biocompatible materials such as porous bioactive calcium phosphate ceramics or titanium are regularly applied in dental surgery: ceramics are used to enhance local bone regeneration in a given defect, this is followed by titanium implant placement for replacing missing teeth. Using synchrotron light for ex vivo hard X-ray micro-imaging facilitates studying the bioregeneration of bone in a 3D manner, extending the knowledge beyond the limits of classical histology. In vitro imaging of titanium implants e.g. under mechanical load provides insight into their micromechanical behaviour and explores potential issues of failure such as micro-gap formation.