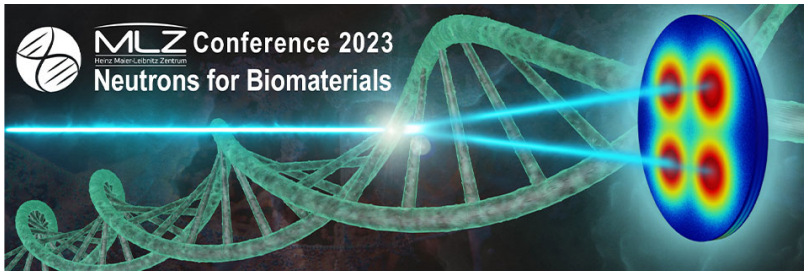

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Degradable metallic implants: Details of the Magnesium-Bone Interface

Tuesday, 23 May 2023 10:40 (40 minutes)

Magnesium (Mg) and its alloys degrade under physiological conditions, which makes them interesting implant materials especially for osteosynthesis and cardiovascular applications. But how strong is the connection between the implant, the corrosion layer and the surrounding tissue, namely bone? Biomechanical approaches like push-out tests have shown that a degraded Mg-pin is surprisingly well connected with the bone irrespective the brittle look of the degradation layer. Still, not much is understood about how the degradation process proceeds in a living system because the correlated processes are highly complex and sufficient data describing the degradation *in vivo* is missing. Many chemical reactions take place in parallel and the living cellular environment can actively participate in the degradation process by altering not only the degradation rate but also the composition of the degradation layer underneath cells which is eventually remodeled into bone matrix. Therefore, we have to include the biological environment and response together with the microstructure and surface properties to tailor the degradation rate.
This presentation will outline how especially X-ray and neutron methodologies deliver valuable insights into the close interplay between microstructure, material degradation and biological response.

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