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**INNOVATIVE IMPLANT MATERIALS**

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**APPLICATION DOMAINS**

- **Dental technologies**
- **Cardiovascular interventions**
- **Cranio-Maxillofacial implants**
- **Orthopedic implants**
- **Subcutaneous implant**

**RESEARCH EXPERTISE**

**BIODEGRADABLE IMPLANT MATERIALS**

The development of lean magnesium alloys on a Zn-Ca basis offers the highest possible biocompatibility. Material forming via Equal Channel Angular Pressing, results in a significant increase in material strength with high ductility. Degradation time can be fine-adjusted by tailor-made alloy composition and special coatings designs.

**PERMANENT IMPLANT MATERIALS**

Implementing material forming by Equal Channel Angular Pressing for medical grade titanium and titanium alloys result in significantly improved mechanical properties. For instance, after processing pure titanium it achieves similarly high mechanical strength as the titanium alloy Ti-6Al-4V with a simultaneous increase in osseointegration.

**ULTRAPURE NANOMEDICAL MATERIALS**

Towards the development of high-end medical devices, we develop laser-based, ultrapure and multifunctional nanomaterials for a broad spectrum of requests. For application in special coatings or full implant strategies, these materials offer local antibacterial, ion- or drug-releasing, X-ray contrast, anti-thrombogenic function and thus do not need to be removed surgically. These biodegradable metallic materials or special coatings feature excellent biocompatibility in-vivo. Additionally, polymeric nano-composites feature local ion- or drug-releasing properties or novel biomedical implants with increased hemo-compatibility and decreased infection rates for a broad range of applications for reconstructive therapy.

**CONCLUSION**

Embedded in the heart of the largest applied research company in Austria, our portfolio covers all, the development, manufacturing and optimization of biomaterials with a primary focus on medical applications. Our three major research areas include biodegradable and permanent materials such as nanotechnology improved implants.