



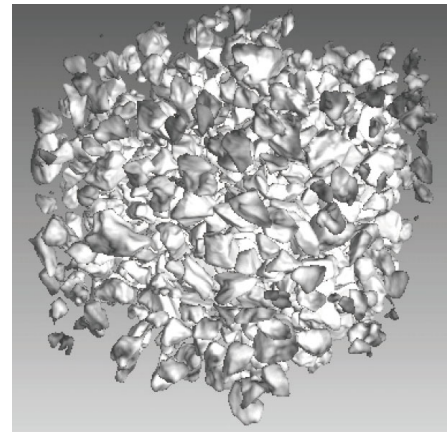
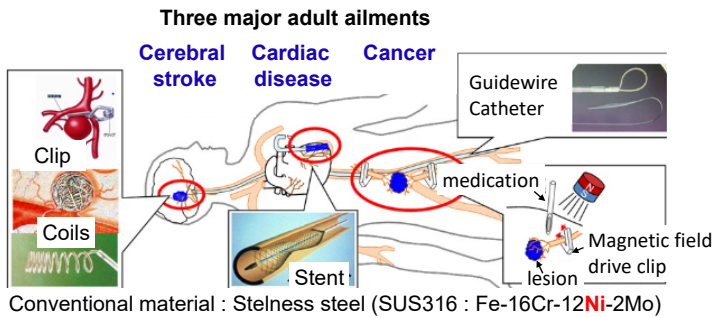
Hosoda-Tahara Lab

Alloy design, development and high functionality of new functional shape variable materials

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<http://www.mater.pi.titech.ac.jp>

- Development of biomedical shape memory / superelastic alloys
- Development of high temperature shape memory alloys
- Ferromagnetic shape memory alloys and their composites
- Intermetallic compounds and phase diagram
- Phase stability, phase transformation and microstructural control

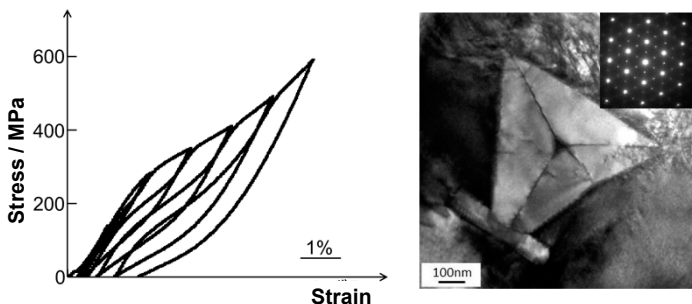


Guidelines for the development of biomedical materials

1. To be too hard than the human body
 2. Ni-hypersensitivity
 3. Poor X-ray radiography
- Tough & Supple
 - Ni free
 - Gold (Au) · Platinum (Pt)

low invasiveness medical devices for vessel treatment and their material design

- 内視鏡やカテーテル, スtentなど, 血管内で治療する機器のため, Ti-Ni合金より生体安全性の高い形状記憶合金を開発
- Ti-Nb-AlやTi-Cr-Sn系など新生体用チタン合金を創造し, 実用に耐えうる優れた形状記憶・超弾性特性の発現に成功

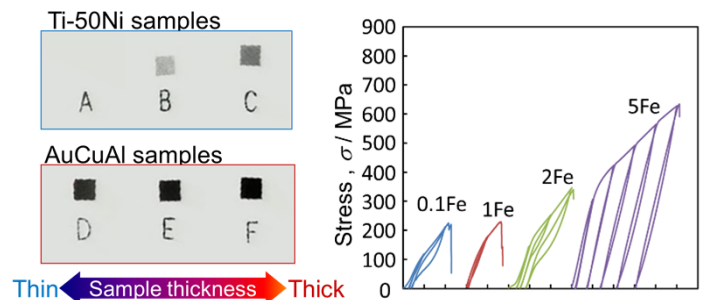


Superelastic Behavior and Internal Structure of TiMoSnZr Alloy

- TiMoSn 基合金の超弾性特性の改善のため, 第4添加元素としてZrに着目
- 時効中に析出する三角錐状の特異な形状の α 相と, 超弾性特性の向上が強い相関

Ferromagnetic Shape Memory Alloys / Polymer composites

- NiMnGa ferromagnetic shape memory alloy particle distributed silicone composite
- 動作速度の高速化 (> 100Hz) を目指し, 磁場駆動形状記憶スマートコンポジットを開発中



AuCuAl基超弾性合金のX線視認性と機械的性質

- 高い生体適合性を持つAuCuAl基超弾性合金は, X線視認性も良好
- AuCuAl 基合金の機械的性質の改善のため, 第4添加元素としてFeに着目