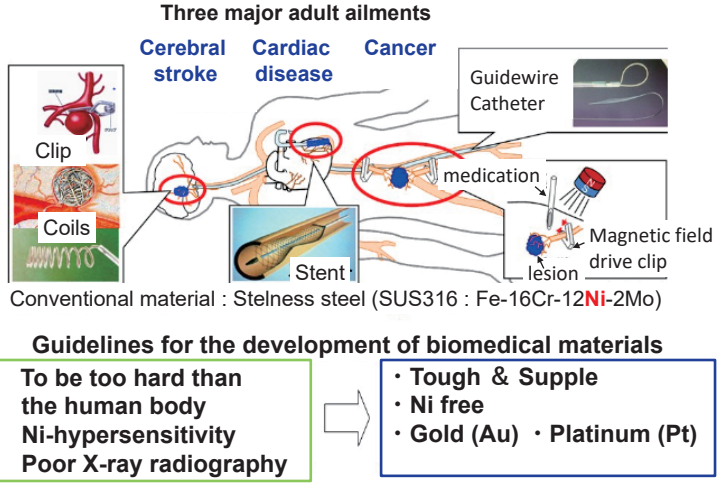
Hosoda Lab

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

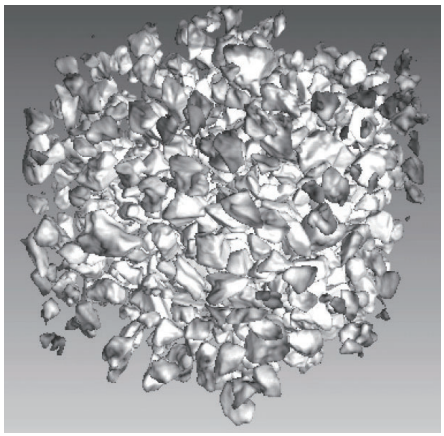
Laboratory for Materials and Structures, Division of Materials Integration
Laboratory for Future Interdisciplinary Research of Science and Technology,
Advanced Materials Research Core& Biomedical Engineering Research Center
http://www.mater.pi.titech.ac.jp

- 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



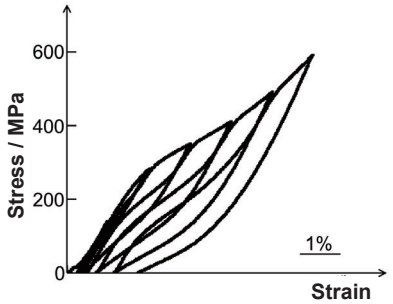
low invasiveness medical devices for vessel treatment and their material design

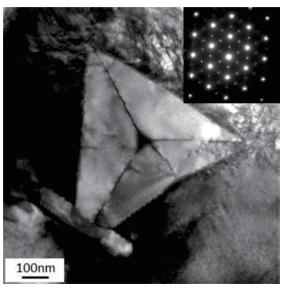
・We have been developing new functional and biocompatible shape memory / superelastic alloys such as Ti-Nb-Al and Ti-Cr-Sn alloys for Endovascular devices to replace NiTi alloys.



Ferromagnetic Shape Memory Alloys / Polymer composites

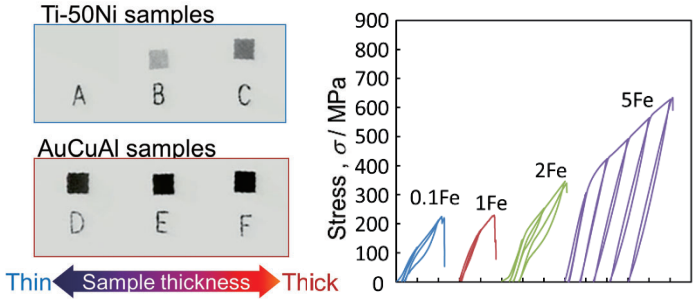
・Giant magnetostrain of 4% was achieved in NiMnGa ferromagnetic shape memory alloy particles distributed silicone matrix composite by applying magnetic field.





Superelastic Behavior and Internal Structure of TiMoSnZr Alloy

・Large superelastic strain around 5% appeared in TiMoSnZr-based alloy by controlling chemical composition and morphology of alpha (hcp phase) precipitates through thermo-mechanical treatment.



X-ray Radiography and Mechanical Properties of AuCuAl Biomedical Shape Memory Alloys

・Good X-ray imaging character was confirmed in AuCuAl, and Fe microalloying dramatically improved room temperature tensile ductility to suppresses intergranular brittleness.