FURUSHIMA LAB.

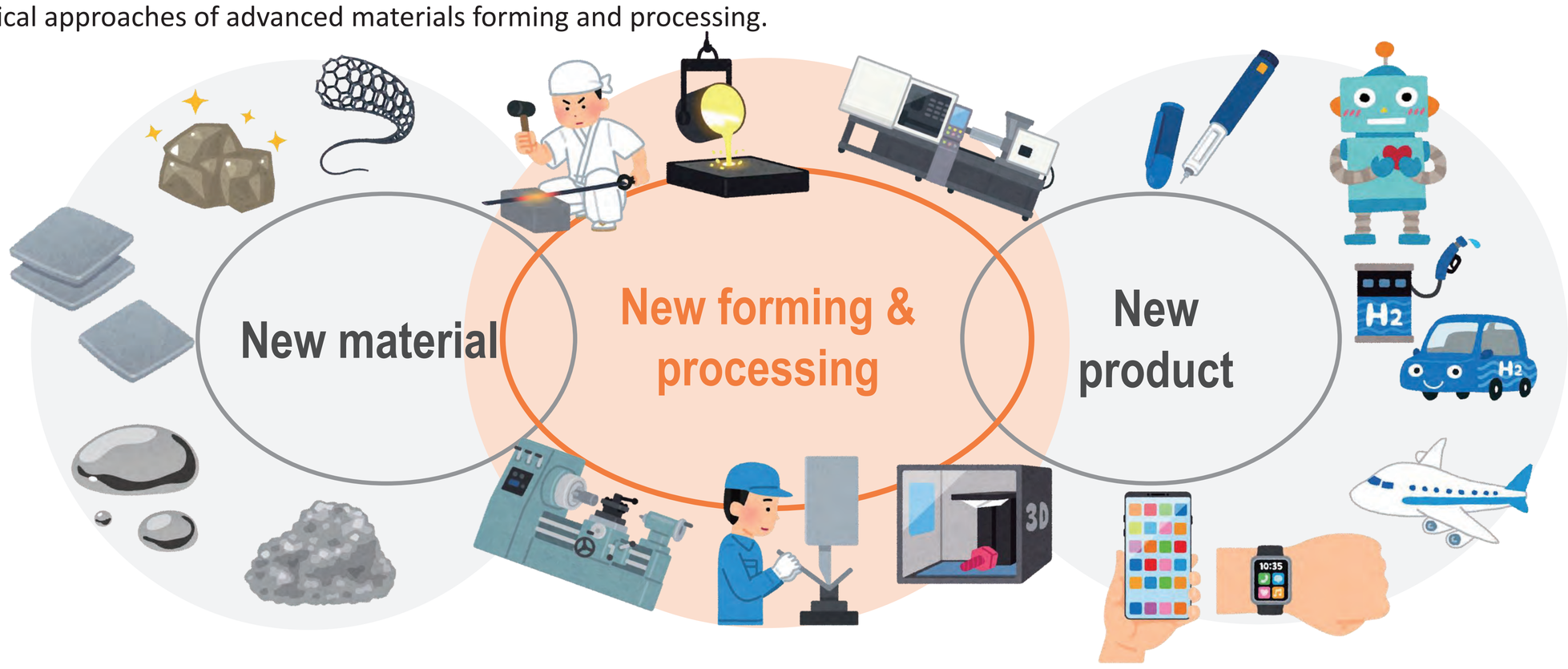
Advanced Materials Forming and Processing

Department of Mechanical and Biofunctional Systems

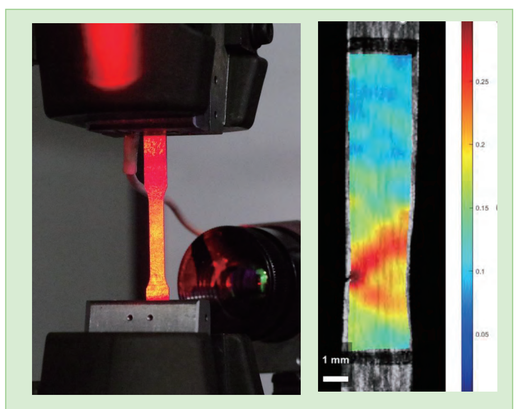
Materials Forming and Processing
Department of Mechanical Engineering, Graduate School of Engineering
https://www.furulab.iis.u-tokyo.ac.jp/

Potential of Advanced Materials Forming and Processing

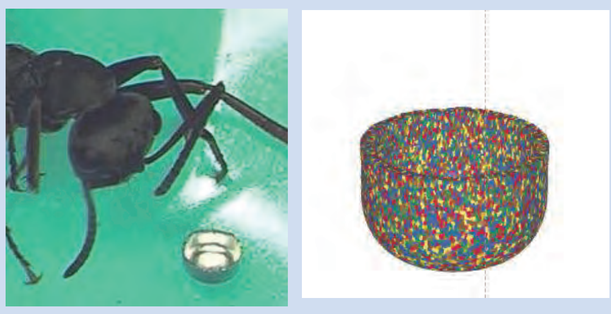
A strong point in Japan Industry is said to be the material field. However, even if valuable and novel materials are developed, it is impossible to fully demonstrate the function of the materials without forming and processing technologies that makes use of it. We are focusing on “the deformation of materials” related to metal forming techniques and engineering plasticity. In our group, we cover both experimental and theoretical approaches of advanced materials forming and processing.



Micro Metal Stamping Process for Medical and Electric devices



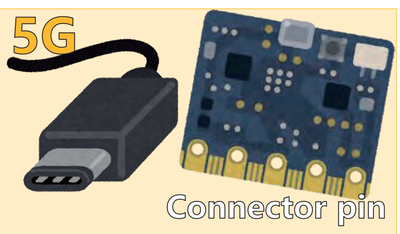
Visualization of deformation



Micro metal forming

Energy-saving air conditioner

Miniaturizing
Heat exchanger



5G

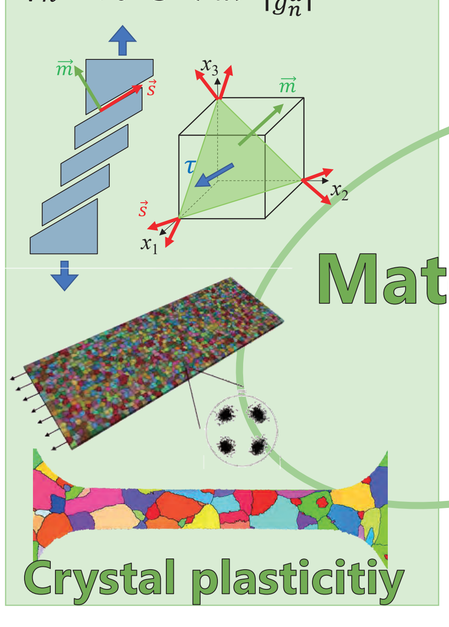
Connector pin

Target Products

Automobile

Weight reduction

$$\dot{\gamma}_n^\alpha = \dot{\gamma}_0 \, \mathrm{sgn}(\tau_n^\alpha) \left|\frac{\tau_n^\alpha}{g_n^\alpha}\right|^{1/m}$$



Crystal plasticitiy

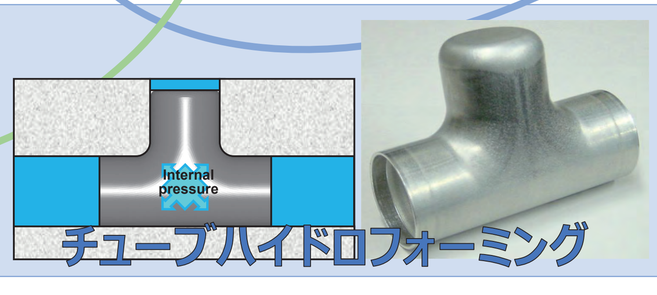
Materials

Material forming and processing

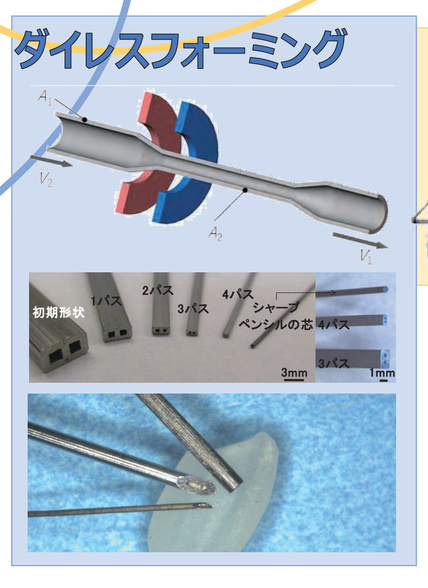
Development of new forming

Optimization of conditions

Forming simulation



チューブハイドロフォーミング



ダイレスフォーミング

Medical device

Biodegradable Mg stent

Li-ion battery

Laminate type battery