

# NIINO LAB.

## [New Manufacturing Technology for New Device]

Design-Led X Platform  
 Department of Mechanical and Biofunctional Systems  
 Social Cooperation Program, Base Technology for Future Robots  
 Additive Manufacturing Science

Department of Precision Engineering

<http://lams.iis.u-tokyo.ac.jp>

### 3D Printing and MID (Molded Interconnect Device)

This lab aims to create novel mechanical and electrical devices with novel manufacturing technology. To do this, we emphasize on functional 3D geometrical shape made of combined material. In detail, we focus on Additive Manufacturing (AM) and Molded Interconnect Device (MID) and their application.



### Our Projects

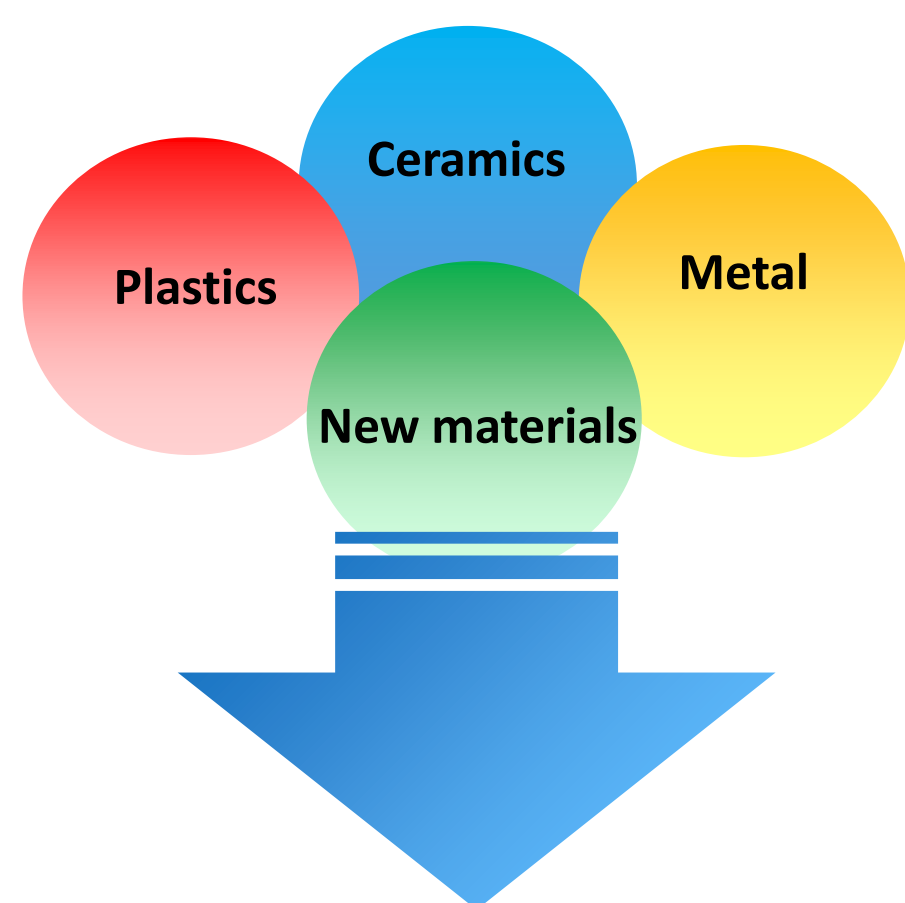
#### Additive Manufacturing (AM)

##### New AM Process

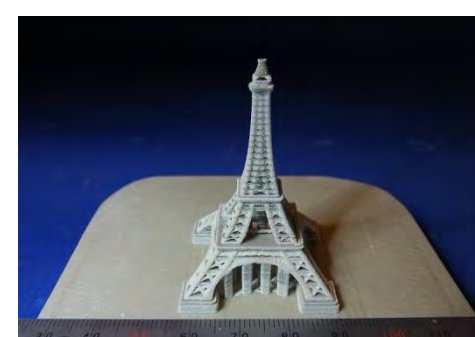
- Process Development in Laser Sintering Fabrication
- Laser Sintering Process for High Performance Polymer

##### AM Application

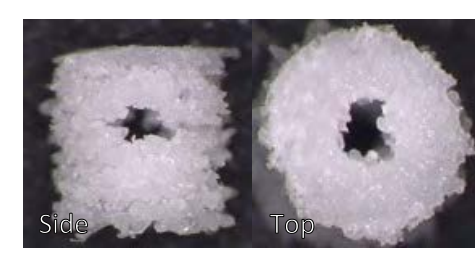
- Laser Sintering Fabrication realizing High Porosity and Intensity
- Laser Sintering Fabrication of Tissue Engineering Scaffolds
- Application of Photonic Device using Laser Sintering Fabrication



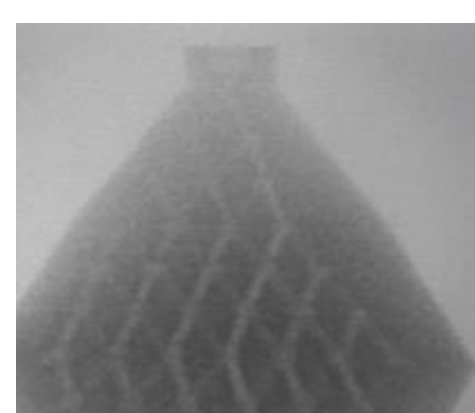
Low temperature laser sintering



Eiffel tower using PEEK (High performance plastic)



Microscopic object fabrication

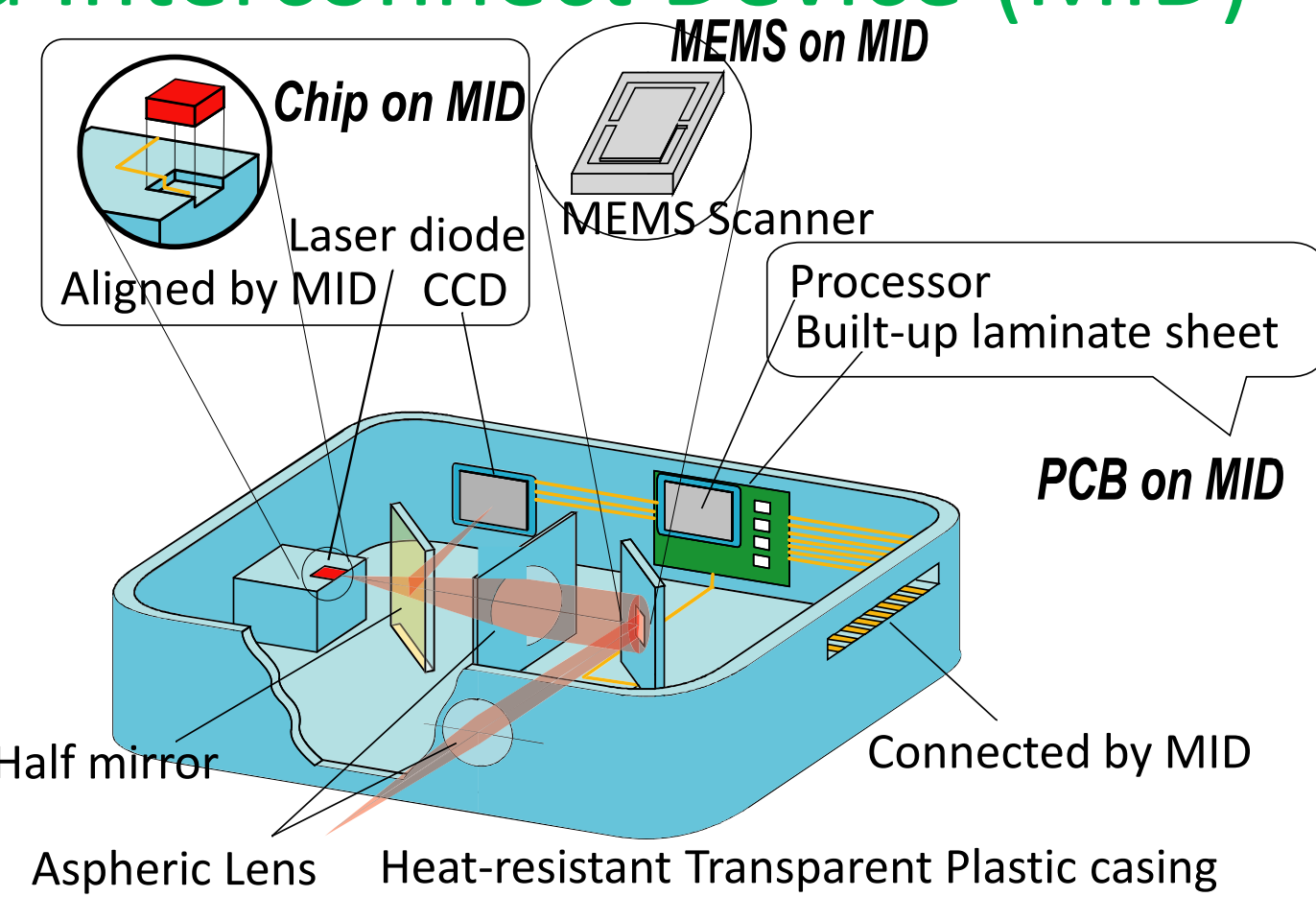


3D Tissue engineering scaffold



Fabrication of Amorphous Structures (Photonic Fractal)

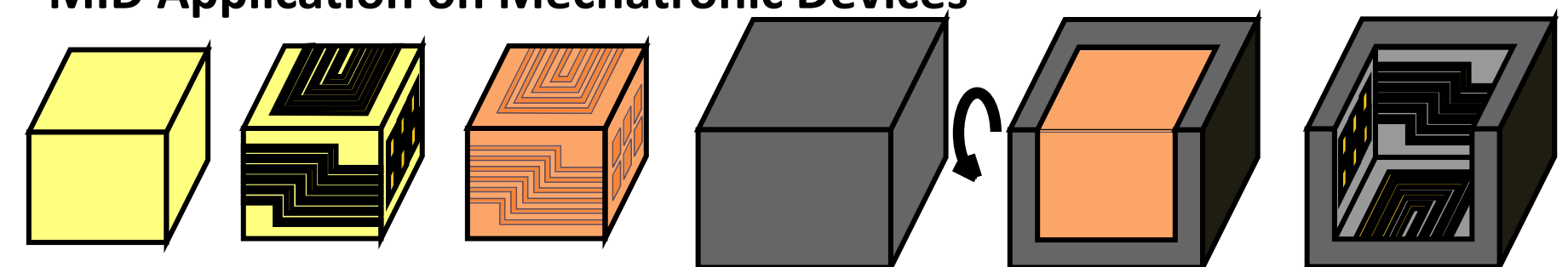
#### Molded Interconnect Device (MID)



##### Fabrication process for MIDs

- MID fabrication process using sacrificial body

##### MID Application on Mechatronic Devices



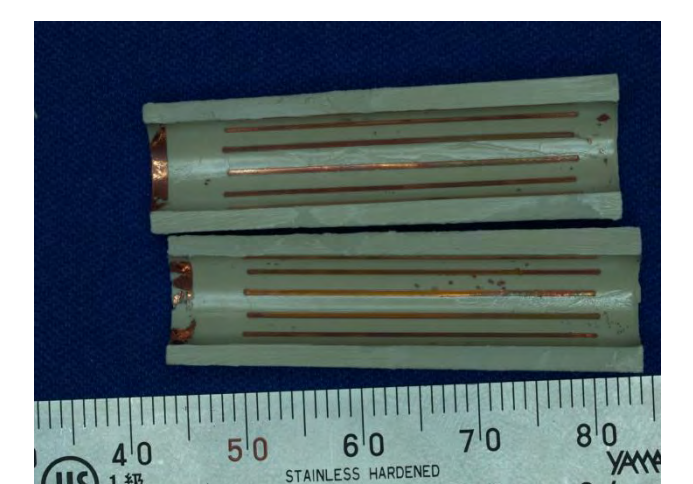
Circuit pattern transfer to inner surface using sacrificial body.

##### MID Application

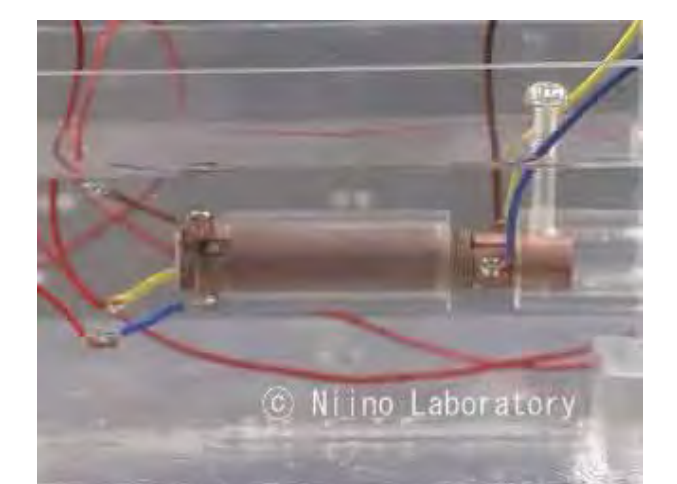
- Circuit pattern transfer to inner surface of objects using sacrificial material



Sacrificial body + Soft etching

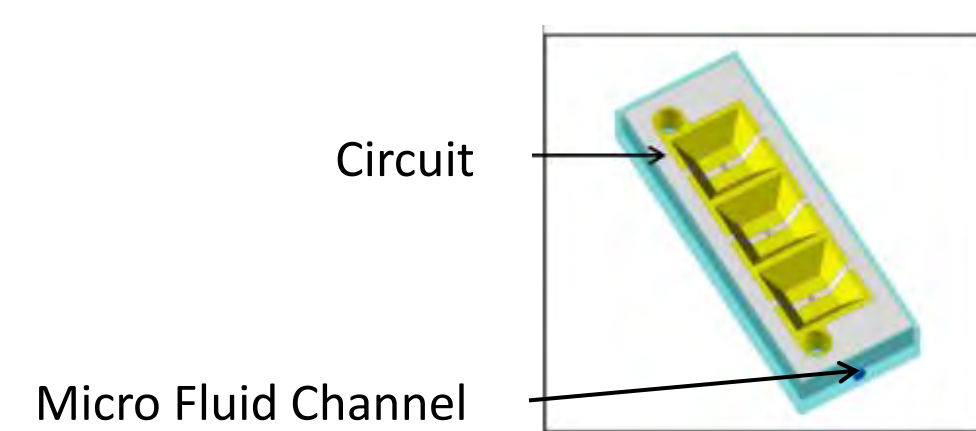


- MID Application on Static Electric Motor.



Electrostatic Motor using MID technology

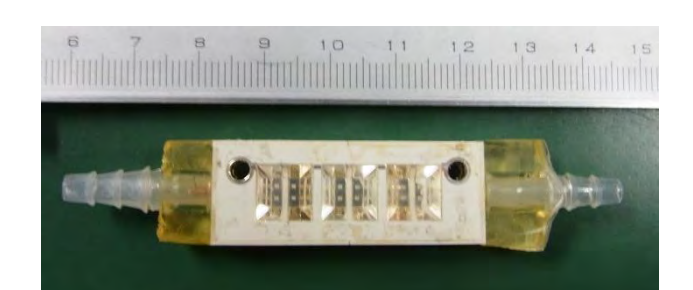
- Injection Molded Functional Fluid Channel



Circuit

Micro Fluid Channel

MID with Micro Fluid Channel



#### AM MID Integration

- Additive Manufacturing of Metal-Plastic Complex Body

