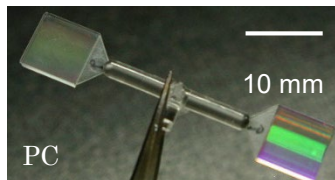


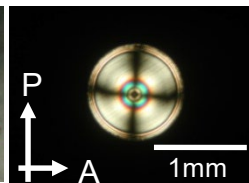
# Precise Polymer Processing for New Manufacturing Technology

[Keywords: injection molding, polymer blends/composites, low environmental impact, toughness improvement] **Professor Hiroshi Ito**

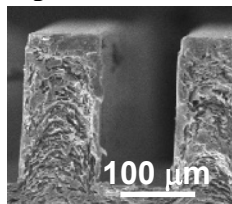
## Development of Fine-structured Plastics/Composites



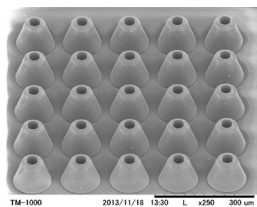
PC  
Nano-pattern Fabrication (Controlled Interference colors via surface replication)



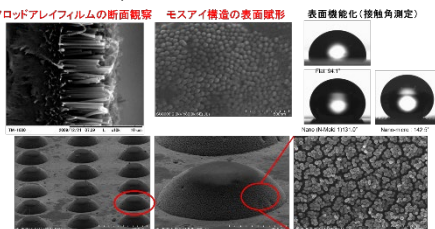
Small optical disc (To fabricate for Miniature optical devices)



Micromolding for micro/nano-composites



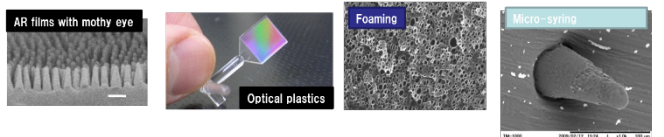
Application of plastic products to the medical field



Nano-scale fiber processing (Proposal of new processing technology and fundamental research of surface functionalization)

## Research Projects – Target & Results–

<b>Electrics/ICT</b> Optical Films Films for Solar cell Printable circuit	<b>Automotive</b> Lights weight Plastics Composites Plastics for EV	<b>Medical/Bio</b> Bio-chip Biocompatible Medical devices	<b>Food/Package</b> Packaging	<b>Eco</b> New Plastics with Low CO2
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## Content:

Main goal of our research is to clarify and control the development of higher-order structure and engineering properties in polymeric materials through various processing technologies. Our research projects cover various types of polymer processing, such as fibers/films drawing, hot embossing, injection molding, composites, 3D printing technology etc.

Particularly, we have been concentrating our effort on exploring the mechanism of structural formation in the molding process, in which polymer materials are produced under high shear stress and high pressure. We are also conducting researches on plastics device with high functional performance via these molding processes, and on structural analysis of these plastics products.

## SELECTED RESEARCH TOPICS

- ✓ Precise Fabrication Tech. for Injection Molding / Nanoimprint / 3D Printing
- ✓ Engineering Properties/ Structures for Various Composites
- ✓ Automotive Plastics (Processing / Eng. Properties / Structures)

etc....

## Appealing point:

We have focused on industry-government-academia collaboration and have achieved various results and efforts in some research projects long time. We will continue our research and education on manufacturing that aims to add high value products to local, regional, and domestic plastics industry.

Yamagata University, Graduate School of Organic Materials Science

Research Interest : Polymer Processing,  
Engineering Properties and Structure, Polymer Composites

E-mail: [ihiroshi@yz.yamagata-u.ac.jp](mailto:ihiroshi@yz.yamagata-u.ac.jp)

Tel & Fax: +81-238-26-3081

HP: <http://pep.yz.yamagata-u.ac.jp>

