

Using glycototechnology to explore new fields in polymer chemistry

Biomolecular Engineering Functional Mactromolecular Chemistry (Shoda Laboratory)

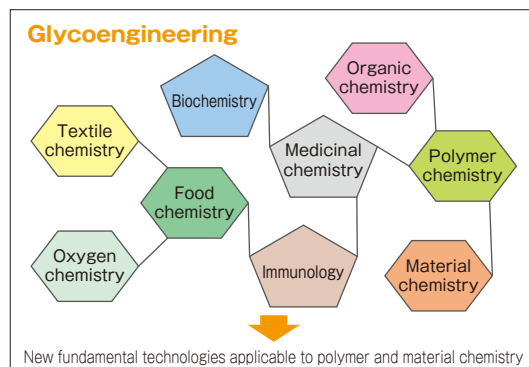


Professor of Biomolecular Engineering
at the Graduate School of Engineering
Doctor of Science

Shin-ichiro Shoda

Graduated from Tokyo Gakugei University Senior High School in 1972. Completed a doctorate at the Graduate School of Science, University of Tokyo in 1981. Appointed assistant professor at the Faculty of Engineering, Tohoku University in 1991. Assumed current position in 1999. "I've always been interested in chemistry. At junior high school I joined the science club, and would do such things as developing photographs in silver solution for school assignments." The Shoda Laboratory has four slogans: Originality; Constant Experimentation Generates Fresh New Understandings; Powers of Observation and Innovation; and Enthusiasm is the Key!

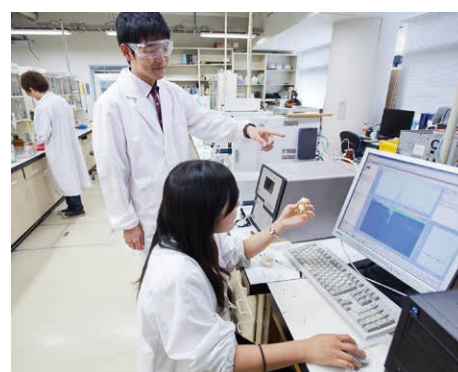
Polymer materials such as plastics, synthetic fibers and rubbers play an increasingly important role in our everyday lives. The field of polymer chemistry is broadly divided into polymer materials and polymer synthesis. Our aim at the Shoda Laboratory is to link polymer properties to polymer chemistry to enable control of higher-order structures in the polymerization domain and develop new fields in polymer chemistry.



Research of this type has never been undertaken before and requires a completely new set of research tools. In light of current concerns about environmental issues, we are striving to pioneer new fields through the development of environmentally-sensitive research tools. Our work in developing new techniques for identifying glycopolymers using biocatalysts and the elongation of substances such as cellulose, chitin and xylan in the laboratory, together with our numerous publications on new methods of crystallization, has attracted interest from researchers around the world.

In glycototechnology, a key field within the discipline of polymer chemistry, we are working on manufacturing themes such as the development of sugar chips for use in the analysis, diagnosis and treatment of sugar chain illnesses. We are also developing basic technologies involving enzymes, the key synthesis tool in sugar chemistry research, to study the complex functionality of living organisms from an engineering perspective and develop useful and valuable technologies designed to benefit humankind and enhance health and safety in the broadest sense.

The Shoda Laboratory is predicated on research through experimentation and testing. Because this is unknown territory, there are no quick answers. But we know that constant experimentation yields discoveries, which in turn generate new information and knowledge. Come and sense the excitement of discovery.



Main research themes

- New polymerization reactions
- New polymer reactions
- Environmentally-friendly glycoside technologies
- Identification and modification of organic enzyme catalysts
- Synthesis and functional evaluation of new glyco materials