

Polymer Seminar

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11:15 am Science 1 - Room 1002

Host: Luyi Sun



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Fabrication and Structural Development of Micro/Nano Surface Patterned Plastics

Abstract: The research on micro-molding and precision transfer molding of plastics is still being carried out very actively. In US, Europe and China, in particular, new molding techniques have been proposed in line with the development of measurement technology. These studies on precision molding have been carried out for more than 25 years since the publication of the paper in 1996. At present, micro-transfer molding technology has matured and is recognized as a so-called standard molding technology. In addition to transfer molding, in which microstructures are formed on the surface of molded products, research and development has been carried out on microstructures and precision injection molding of machine parts. Furthermore, transfer molding, which enables the formation of nano-scale structures on plastic surfaces, has attracted attention. On the other hand, press molding, so-called nanoimprinting, has attracted attention since 1995 and a lot of research has been carried out about semiconductor processes, from exposure etching using UV-cured resin to the formation of nanoscale microscopic structures on base materials using UV or heat-cured resin. This imprinting technology is derived from printing technology and uses a mold with a micro- or nanoscale structure to produce a replica of the mold. Basically, it is defined as a single molding as it utilizes a mold. The research topics range from new molds and materials to be transferred, to transfer processes and device fabrication by applying the uneven shape after transcription.

Here, I would like to introduce the research trends in the past few years and our reported case studies on micro-and nano-transfer molding by injection molding and micro/nanoimprinting.