

WORLD CONGRESS ON SMART MATERIALS AND STRUCTURES

&

3rd International Conference on

POLYMER CHEMISTRY AND MATERIALS ENGINEERING

November 21-22, 2019 | Singapore

**Masayuki Yamaguchi***Japan Advanced Institute of Science and Technology, Japan***Structure and properties for polymeric materials containing specific salts**

The effect of the addition of a specific metal salt compound on the glass transition temperature T_g as well as the dynamic mechanical properties of polymers was investigated using conventional plastic glasses such as poly(methyl methacrylate) (PMMA) and polycarbonate (PC). Lithium trifluoromethanesulfonate (LiFMS) and lithium perchlorate (LiClO₄) were found to be miscible with PMMA and PC and thus the blends show excellent transparency. Furthermore, the modulus enhancement in the rheological glassy region was clearly detected by the addition of the salts especially for PC. In the case of PMMA, T_g was greatly enhanced, leading to improved heat resistance, without losing its good flowability at melt-processing temperature. The ion-dipole interaction

between oxygen atoms in the polymers and the lithium cations dissociated in a polymer is responsible for the phenomena, which becomes weak at high temperature. This technique is applicable to various polymers. For semicrystalline polymers, the crystallization rate tends to decrease and thus the degree of crystallization becomes low by the salt addition. Moreover, some specific salts enhance the miscibility for immiscible polymer pairs.

Biography

Masayuki Yamaguchi has joined in Japan Advanced Institute of Science and Technology after working in a chemical company in Japan for 17 years. He is a professor and a head of Materials Chemistry Area. He got his doctorate in engineering from Kyoto University, Japan.

e: m_yama@jaist.ac.jp

*Notes:*