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**Two-dimensional folded chain crystals composed of a single isotactic poly(methyl methacrylate) chain observed by atomic force microscopy** JIRO KUMAKI, TAKAHIRO ANZAI, Department of Polymer Science and Engineering, Yamagata University — We successfully visualized crystallization behavior of a single isolated polymer chain at a molecular level by atomic force microscopy (AFM). Previously, we found that isotactic poly(methyl methacrylate) (it-PMMA) formed two-dimensional folded chain crystals upon compression of its Langmuir monolayer on a water surface, and the molecular images of the crystals deposited on mica were clearly visualized by AFM (Kumaki, et al. JACS 2005, 127, 5788; J. Phys. Chem. B 2013, 117, 5594). In the present study, a high-molecular-weight it-PMMA was diluted in a monolayer of an it-PMMA oligomer which cannot crystallize due to the low molecular weight. At a low surface pressure, isolated amorphous chains of the high-molecular-weight it-PMMA solubilized in the oligomer monolayer were observed. On compression, the isolated chains converted to crystals composed of a single chain. Detailed AFM observations of the crystals indicated that the crystalline nuclei preferably formed at the ends of the chains, and the size of the nuclei was almost independent on the molecular weight of the it-PMMA in a wide range.

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