

Abstract Submitted  
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**An Integrated Ultrafast Scanning Calorimetric and Micro Raman Spectroscopic Investigation of Polymer Crystallization**<sup>1</sup> DONGSHAN ZHOU, LAI WEI, JING JIANG, GI XUE, XIAOLIANG WANG, Department of Polymer Science and Engineering, Nanjing University — Ultrafast differential scanning calorimetry (UFDSC) with scanning rate up to 1,000,000 K/s has already been used to study the kinetics of crystallization and phase transition of some polymers and liquid crystal. Recently, we developed stage type UFDSC (ST-UFDSC) with comparable controlled heating and cooling rates. ST-UFDSC enables sample treatment and measurement integrated with microstructural characterization. As an example, we investigated the Raman spectroscopy of PET at different crystallization stage obtained by programmed rapid cooling and heating processes. Although the Raman spectroscopy is not acquired during rapid heat treatments, the structure is assumed to remain by ultrafast quench below the glass transition temperature, when the Raman spectroscopy is collected. We expect that the combination technique can be also used to investigate dynamic relaxation behaviors of metastable states obtained by ultrafast heat treatments.

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