

快报

## 原子力显微镜针尖诱导聚氧乙烯熔体结晶的研究

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摘要

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分类号

## AFM-TIP-INDUCED CRYSTALLIZATION OF POLY(ETHYLENE OXIDE) MELT DROPLETS

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**Abstract** The AFM-tip-induced crystallization of poly(ethylene oxide)(PEO)melt droplets was studied. The melt droplets with the height of 50~100 nm and the lateral size of 2~3  $\mu\text{m}$  were obtained by melting the PEO ultrathin film on the mica surface. For the PEO samples with the number average molecular weights( $M_n$ )ranged from  $1.0 \times 10^3$  to  $1.0 \times 10^4$  g/mol, the lateral perturbation from the AFM tip with hard-tapping or nanoscratch mode could not induce the growth of the flat-on lamellae. By contrast, under AFM nanoindentation mode, the tip-induced crystallization occurred when a sufficiently high vertical tip force was applied to the melt droplets of PEO with  $M_n \geq 1.0 \times 10^4$  g/mol. Moreover, the experimental results indicated that AFM-tip-induced crystallization with nanoindentation method had PEO molecular weight(viscosity)dependence.

**Key words** [Atomic force microscopy](#) [Poly \(ethylene oxide\)](#) [Tip-induced crystallization](#) [Nanoindentation](#)

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