

Abstract Submitted  
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**Nanoparticles Enhance the Formation of 3D Crystals in Thin Polyethylene Films** BLESSY KUMPATI, Lamar University — Polyethylene (PE) thin films usually recrystallize in a two dimensional pattern with the chains being perpendicular to the plane of the film. This add limitations to the stability of the material. The addition of nanoparticles on polyethylene thin films may lead to an improvement of these properties by altering the rate or mode of crystal formation. This study used differential scanning calorimetry (DSC) to determine the effect of the addition of nanoparticles of TiO<sub>2</sub> on the recrystallization of PE chains within a thin film. Following Avrami protocol and analysis, modes of crystal formation were compared with the addition of different amounts of nanoparticles. Results suggest that an optimum amount of particles can induce a thermal 3D crystal formation in PE thin films.

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