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“Multiple Melting of Semicrystalline Polymers”

ABSTRACT

Multiple melting of polymers has been observed on heating experiments since the discovery of semicrystalline polymers, with upwards of three melting peaks observed. Although the intermediate and high melting endotherm peaks are attributed to crystals formed at the particular crystallization temperature and on recrystallization during heating experiments, respectively, the origin of the low melting endotherm is still not understood. It has been observed previously that there is an upward shift of the low melting endotherm with increasing annealing time, which is believed to be the result of secondary crystals nucleating and growing within the bulk material. Within the Marand group, a perceived cross-over temperature is proposed to exist where crystallization above this point inhibits the presence of crystals owing to the low melting endotherm, while below that temperature it is present. This investigation has been performed experimentally through DSC, SAXS, and XRD on isothermally crystallized films of a highly pure and stereoregular, low PDI isotactic polystyrene. Understanding why these events occur will provide a better understanding of polymer crystallization and creep behavior of polymer materials.

BIO:

Mr. Jonathan Hoang joined the Marand group in August 2011 as a MS student. He graduated in May 2007 from the United States Air Force Academy with a BS in Materials Science and Engineering and worked on high-temperature materials for use in space-lift applications at Edwards AFB, CA prior to coming to Virginia Tech. During his time in the Golden State, he earned an MBA with a Marketing emphasis from Pepperdine University, although has no aspirations whatsoever of working in the business world.