

# Accepted Manuscript

A study on the crystallization kinetics of PLLA in the presence of Graphene Oxide and PEG-grafted-Graphene Oxide: Effects on the nucleation and chain mobility

Samira Karimi, Ismaeil Ghasemi, Foroud Abbassi-Sourki



PII: S1359-8368(18)31877-8

DOI: [10.1016/j.compositesb.2018.10.004](https://doi.org/10.1016/j.compositesb.2018.10.004)

Reference: JCOMB 6082

To appear in: *Composites Part B*

Received Date: 13 June 2018

Revised Date: 29 September 2018

Accepted Date: 1 October 2018

Please cite this article as: Karimi S, Ghasemi I, Abbassi-Sourki F, A study on the crystallization kinetics of PLLA in the presence of Graphene Oxide and PEG-grafted-Graphene Oxide: Effects on the nucleation and chain mobility, *Composites Part B* (2018), doi: <https://doi.org/10.1016/j.compositesb.2018.10.004>.

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

# **A Study on the Crystallization Kinetics of PLLA in the Presence of Graphene Oxide and PEG-grafted-Graphene Oxide: Effects on the Nucleation and Chain Mobility**

Samira Karimi<sup>a</sup>, Ismaeil Ghasemi<sup>a</sup>, Foroud Abbassi-Sourki<sup>a,\*</sup>

<sup>a</sup> Faculty of Processing, Iran Polymer and Petrochemical Institute, P.O.Box: 14965/115, Tehran, Iran.

\*corresponding author, E-mail address: [F.abbasi@ippi.ac.ir](mailto:F.abbasi@ippi.ac.ir)

## **Abstract**

The crystallization behavior of Poly(L-lactic acid) (PLLA) was studied in the presence of different nanoparticles. Two types of nanoparticles including Graphene oxide (GO) and Poly(ethylene glycol) (PEG)-grafted Graphene oxide (GO-g-PEG) were examined at various concentrations. SEM images revealed an improvement in the dispersion of nanoparticles after grafting PEG chains on the GO surface. Kinetic analysis and morphological observations indicated that GO-g-PEG has enhancing effects on the crystallization rate and nucleation ability of PLLA. This was attributed to the improved dispersion of GO-g-PEG in the PLLA matrix. The contribution of nucleation and growth steps was examined using generalized Lauritzen-Hoffman model.

**Keywords:** PLLA, Isothermal Crystallization, Nucleation, Graphene Oxide

Download English Version:

<https://daneshyari.com/en/article/11020705>

Download Persian Version:

<https://daneshyari.com/article/11020705>

[Daneshyari.com](https://daneshyari.com)