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Syndiotactic polystyrene fibers with antimicrobial properties

Syndiotactic polystyrene (sPS) is a stereoregular polymer with a very complex polymorphic behaviour capable of forming co-crystals (molecular-complex crystalline phases) with many low molecular mass guests. In particular the formation of co-crystalline forms with optically active molecules (chromophore, fluorescent, photoreactive), magnetic and polar molecules has been reported and films presenting s-PS/active-guest co-crystalline phases have been proposed as advanced optical, ferroelectric, and paramagnetic materials [1]. The formation of s-PS co-crystalline phases with carvacrol, a natural antimicrobial, has been also recently reported [2] and it has been shown that the inclusion of the antimicrobial molecules within the co-crystalline phase allows a slow antimicrobial release which may assure a long-term antimicrobial efficiency. In this contribution different aspects relative to the preparation and the crystalline structure of s-PS fibers with co-crystalline phases containing different natural microbial molecules such as eugenol, thymol will be presented and discussed. The antimicrobial desorption properties as well as the antimicrobial activity tests of these materials will be also reported.

1. G. Guerra et al., *J. Polym. Sci., Part B: Polym. Phys.* 50 (2012), 305-322.
2. A. R. Alburnia et al., *J. Polym. Sci., Part B: Polym. Phys.* 52 (2014), 657-665.

Preferred topic

Solid state - crystallo-solvates

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