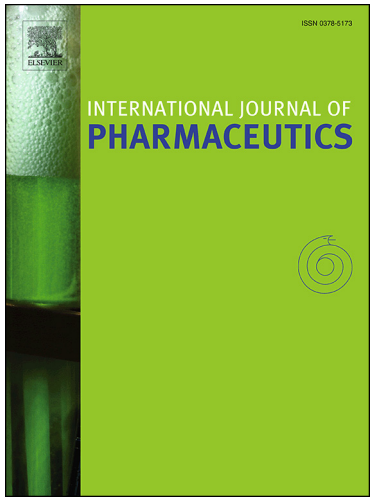

Scaling laws and size effects for amorphous crystallization kinetics: Constraints imposed by nucleation and growth specificities

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Scaling laws and size effects for amorphous crystallization kinetics: Constraints imposed by nucleation and growth specificities

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Abstract. In the present paper we review different aspects of the crystallization of amorphous compounds in relation to specificities of the nucleation and growth rates. Its main purpose is: i) to underline the interest of a scaling analysis of recrystallization kinetics to identify similarities or disparities of experimental kinetic regimes. ii) to highlight the intrinsic link between the nucleation rate and growth rate with a temperature dependent characteristic transformation time $\tau(T)$, and a characteristic size $\xi(T)$. The consequences on the influence of the sample size on kinetics of crystallization is considered. The significance of size effect and confinement for amorphous stabilization in the pharmaceutical sciences is discussed.

Keywords: Amorphous state, crystallization, nucleation and growth, scaling, size effect.