

Functionalization of glass surfaces with SAMs: the effect of synthesis conditions and the application to pharmaceutical crystallization

Original

Functionalization of glass surfaces with SAMs: the effect of synthesis conditions and the application to pharmaceutical crystallization / Artusio, Fiora. - ELETTRONICO. - (2020). ((Intervento presentato al convegno 5th Healthcare & Life Science & Entrepreneurship Workshop tenutosi a Pisa nel 3-4 settembre 2020.

Availability:

This version is available at: 11583/2854028 since: 2020-11-27T17:31:19Z

Publisher:

Vision Dynamics

Published

DOI:

Terms of use:

openAccess

This article is made available under terms and conditions as specified in the corresponding bibliographic description in the repository

Publisher copyright

(Article begins on next page)

Functionalization of glass surfaces with SAMs: the effect of synthesis conditions and the application to pharmaceutical crystallization

Fiora Artusio^{1*}

¹ Department of Applied Science and Technology, Politecnico di Torino, corso Duca degli Abruzzi 24, 10129, Torino, Italy

Surfaces can alter the outcome of crystallization processes occurring via heterogenous nucleation. In a pharmaceutical scenario, the promotion of specific polymorphs or crystalline habits, as well as the alteration of nucleation kinetics, are compelling issues. Surfaces with controlled physico-chemical features represent a valuable tool for the study of drug crystallization by heterogeneous nucleation. For this purpose, the functionalization of glass with Self-Assembled Monolayers (SAMs) via silane chemistry was investigated. SAMs carrying thiol, amino, glycidyl and methacrylate end-groups will be presented. Different sets of synthesis conditions strongly affected the quality of SAMs. In this perspective, the reaction medium and the reaction time were identified as key parameters for getting controlled surface functionalization. Typical surface roughness was approx. 130 nm and SAM thickness was below 1 nm. SAM chemistry was investigated with XPS to confirm the presence of characteristic groups on the surface of glass. Finally, the application of SAMs to the crystallization of aspirin will be presented, discussing the impact of several surface chemistries on the nucleation kinetics.