INTERACTIONS BETWEEN PVC, PLASTICIZER AND DRUGS: APPLICATION TO PVC INFUSION SETS

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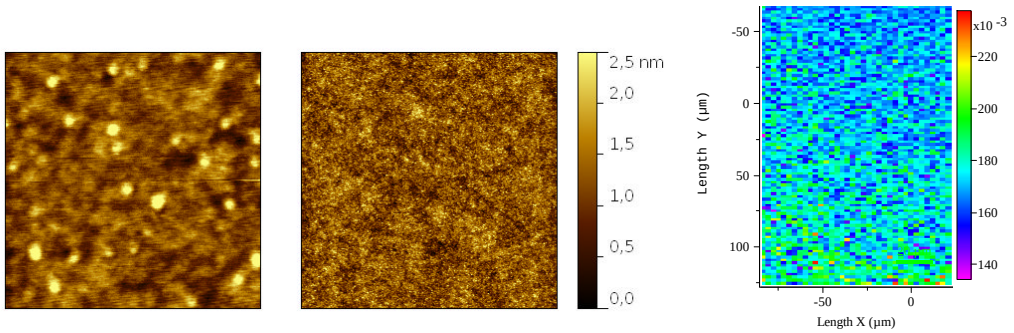
ABSTRACT

Plasticized PVC tubing in infusion sets are used to inject drugs, nutriments or blood to patients. Plasticizers are known to be able to migrate in infused solution and to favor the sorption of drug molecules. Health concerns about plasticizers are thus the subject of a great debate because first of their potential adverse effects on organism, and because of the drug sorption issue that can have dramatic consequences for the therapy : a reduced drug delivery of anti-coagulating drugs might for example result in blood clotting. Here we tried to understand the interaction between PVC, a drug (diazepam) and different plasticizers (DEHP, TOTM…) by studying the surface modification, and the diazepam and plasticizer localization in PVC films that were plasticized at different ratios and that were stored with drug solutions. Raman spectroscopy, FTIR and AFM were among the main techniques used for this study.



a) b) c)

Fig. 1: a) AFM height image (2x2 µm) of the surface of a plasticized PVC film after storage with drug solution b) AFM height image (2x2 µm) of the surface of a plasticized PVC film before storage with drug solution c) chemical cartography of the ratio of plasticizer in a film section (Raman microscopy).