

Experiment Proposal

Experiment number GP2022003

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Experiment title

Characterisation of artificial skin for application in skincare products using SEM-EDX

SRF Instrument
Scanning Probe Microscopes
Days requested: 3
Access Route

Rapid Access

Previous GP Number: -
Science Areas

Biology and Bio-materials

DOI: -
Sponsored Grant

None

Sponsor: -
Grant Title

-

Grant Number: -
Start Date

-

Finish Date: -
Similar Submission?

Unit CSGI-University Florence

Industrial Links

Arterra Bioscience S.p.A.

Non-Technical Abstract

In recent years, cosmetic delivery systems have played an important role for improving the penetration of active molecules and for their release in a controlled way. We propose a series of studies to investigate the permeation of dermal/transdermal delivery systems on synthetic and human skin samples - the penetration of drug molecules within skin, the intermolecular interactions amongst active ingredients, carriers and skin components. We propose to use two SRFs, i.e. Horiba Xplora Nano (for Raman spectroscopy - Confocal Microscope) and Tescan Vega SEM-EDX (for Scanning Probe Microscope), located at the Unit-University of Rome Tor Vergata, the MRF1-SAXS located at the Unit-CSGI & University of Florence, and the TOSCA beamline for inelastic neutron scattering (INS) at ISIS Facility (RB 2220280 under FAP evaluation requesting 3 days of TOSCA beam time). The SEM-EDX will be used for the collection of morphological maps of specific regions of interests treated and untreated in the artificial skin samples. By combining the morphological (using back-scattered and secondary electrons) of the SEM and the elemental analysis of the EDX, it will be possible to highlight any non-homogeneity in the diffusion the active ingredients, as well as to pinpoint specific regions for further study with the confocal Raman microscope. The comparative analyses with the bulk spectra of the isolated components and INS will provide new insight on the diffusion and penetration within skin, hydrogen vibrational dynamics and highlight the effects of intermolecular interactions. The results will be used to optimise the preparation strategies of healthcare products.

Publications

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Instruments
Access Route
Science Areas
Sponsored Grant
Grant Title
Start Date
Similar Submission?
Industrial Links
Days Requested:
Previous RB Number:
DOI:
Sponsor:
Grant Number:
Finish Date:


Sample record sheet

Principal contact Dr Giovanni Romanelli, University of Rome Tor Vergata, ITALY
SRF Instrument **Scanning Probe Microscopes** **Days Requested: 3**
Special requirements:

SAMPLE

Material	artificial Skin	-	-
Formula	collagen, proteins, lipids	-	-
Forms	Solid		
Volume	0.5 cc		
Weight	0.5 g		
Container or substrate	-	-	-
Storage Requirements	-	-	-

SAMPLE ENVIROMENT

Temperature Range	300 - 300 K	-	-
Pressure Range	0.1 - 1000 mbar	-	-
Magnetic field range	0 - 0 T	-	-
Standard equipment	-	-	-
Special equipment	-	-	-

SAFETY

Prep lab needed	Yes	-	-
Sample Prep Hazards	-	-	-
Special equip. reqs	-	-	-
Sensitivity to air	No	-	-
Sensitivity to vapour	No	-	-
Experiment Hazards	-	-	-
Equipment Hazards	-	-	-
Biological hazards	-	-	-
Radioactive Hazards	-	-	-
Additional Hazards	-	-	-
Additional Details	-	-	-
Sample will be	Removed By User	-	-

