Emulseo's hydrophobic surface treatment: Fluo-ST3

DESCRIPTION

Fluo-ST3 is a fluorophilic/hydrophobic surface treatment composed of a fluoroalkylsilane dissolved in a perfluorinated polyether solvent. Fluo-ST3 is a clear solution with low viscosity and low interfacial tension. After treatment, a uniform layer is covalently attached to the treated surfaces, making the walls of the microfluidic channels both hydrophobic and fluorophilic. This treatment allows a better generation and stability of droplets in fluorinated oils. Fluo-ST3 is especially adapted for use with Emulseo's surfactants and oils.

BENEFITS OF FLUO-ST3

Material compatibility
including glass, PDMS, COC, PMMA, PC and Flexdym

Easy-to-use
no plasma pre-treatment or post-treatment heating required

Droplet performance
and stability improvement

COMPARISON WITH OTHER EMULSEO'S SURFACE TREATMENT

Surface treatment	Compatibility	Shelf Life	Stability after treatment	Protocol benefits	Performance	Hazard symbol
Fluo-ST1	Glass / PDMS	4 months	12 months	/	++	
Fluo-ST3	Glass / PDMS / COC / PMMA / PC / Flexdym	12 months	12 months	No post-treatment heating	++	No

EXPERIMENTAL RESULTS

Experimental conditions

Surface treatment's protocol with Fuo-ST3:

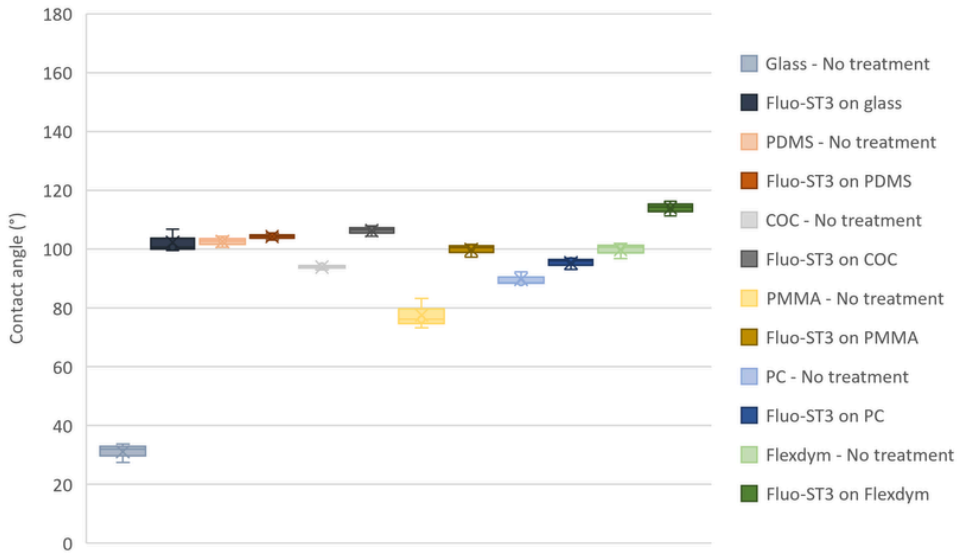
- Clean the surface with isopropanol.
- Cover the surface with Fluo-ST3.
- Remove the excess.
- Leave for 30 s and flush with argon.
- Rince the surface with a fluorinated oil and flush with argon.

Contact angle measurement:

- Drop a 5 µL droplet on the surface.
- Take a photo and analyze the contact angles via the ImageJ software.
- Carry out the measurements in triplicate for each material tested.

Performances on different materials

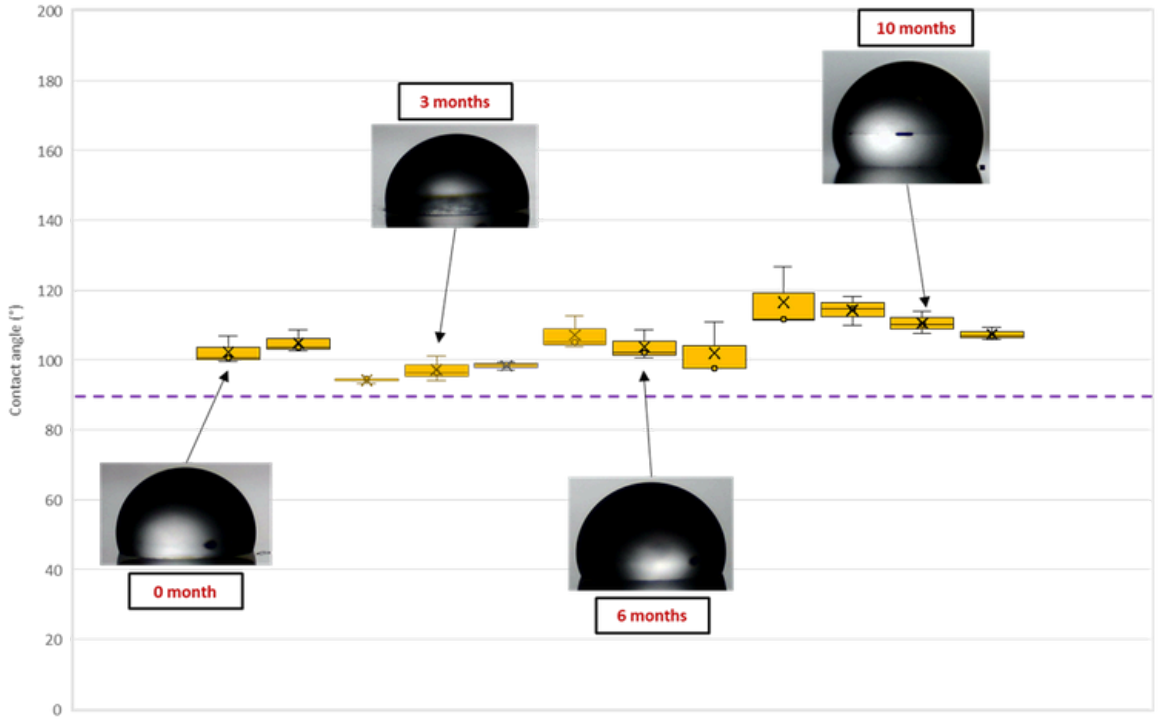
The following graph shows the contact angle measurements obtained, before and after treatment with Fluo-ST3, on different materials (glass, PDMS, COC, PMMA, PC, Flexdym).



Whatever the material tested, the Fluo-ST3 surface treatment increases the hydrophobicity of the material.

Long-term stability – Storage at room temperature in a glass vial

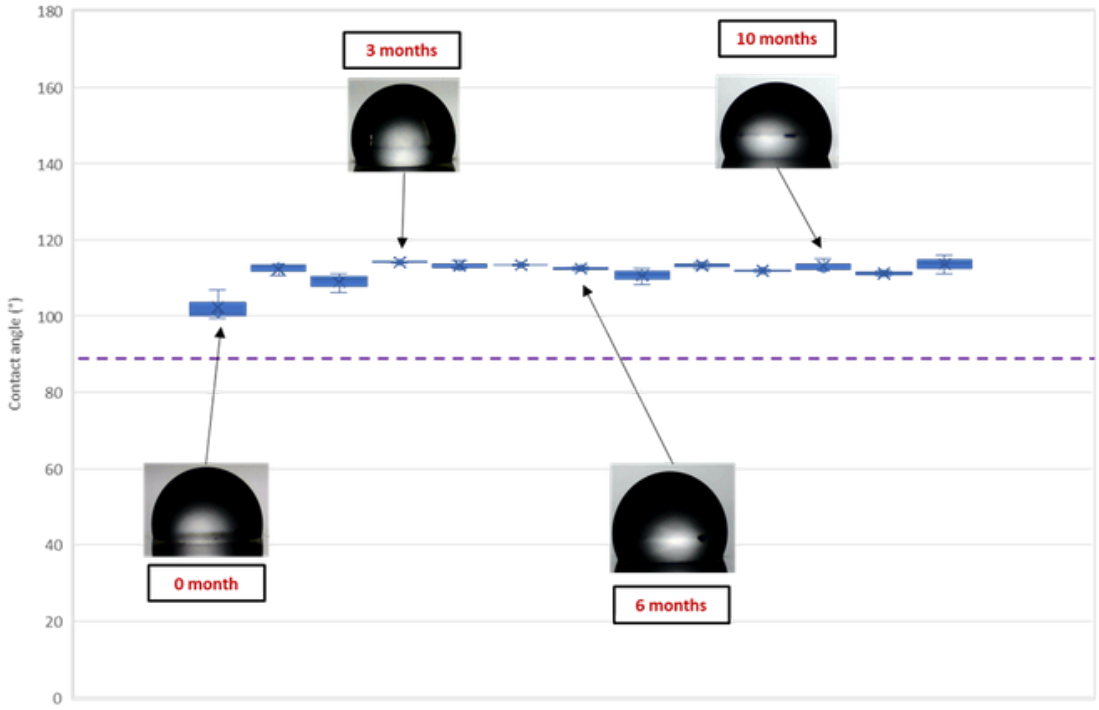
The following graph shows the contact angle measurements obtained after treating a glass slide with Fluo-ST3 surface treatment stored in a glass vial at room temperature for up to 12 months.



The Fluo-ST3 surface treatment maintains the same performance on glass slides after storage for 12 months in a glass vial at room temperature.

Long-term stability – Coated glass slide at room temperature

The following graph shows the contact angle measurements obtained on glass slides stored for up to 12 months at room temperature after treatment with Fluo-ST3.



Glass slides stored at room temperature remain hydrophobic for up to 12 months after treatment with Fluo-ST3.

STORAGE CONDITIONS

The surface treatment Fluo-ST3 can be stored at room temperature in the supplied vial for one year without loss of performance.
After treatment, the chip can be stored at room temperature for one year without loss of performance.

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