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【915】 Understanding oleophobicity through plasma polymer substitutes for PFAS

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Per- and polyfluoroalkyl substances (PFAS) are employed extensively for their amphiphobic properties, but are being banned for environmental and health reasons. No competitive alternatives exist; one key reason is that oleophobicity is not well understood.

Here, the surface force apparatus (SFA) is used to explore physical and interfacial properties of a promising substitute: hexamethyldisiloxane plasma polymer films (PPF), the surface properties of which can be tuned by adjusting chemical conditions in the reactor. The SFA measures changes in free energy across a medium as a function of separation between two PPF-coated confining surfaces. Measurements are made across various liquids to show how PPF composition and topography affect surface forces.

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