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Device for Large-area Langmuir-Schaefer Transfer with In Situ Control of Substrate Temperature

A novel roll-to-roll system enables large-area, temperature-controlled Langmuir-Schaefer transfer to fabricate molecular monolayers for functional coatings, biocompatible films, and nanoelectronics.

Langmuir-Schaefer transfer (LS) is a technique used to fabricate molecular monolayers on a substrate. These thin films can be used to produce nanosized electrical circuits and functional coatings e.g. biocompatible surfaces on implants or solar energy capturing surface for spacecrafts. The conventional method of LS is by dipping a horizontal substrate in a liquid that has monolayer of the desired molecules assembled at the air-liquid interface. The major disadvantage of LS is that only a small surface area of film can be fabricated at once.

Researchers at Purdue University have developed a device which can fabricate monolayer films on a heated roller. This device has the capability to conduct LS in a roll-to-roll configuration thereby, dramatically increasing the amount of film that can be fabricated.

Advantages:

-Large area Langmuir-Schaefer transfer

-Temperature control of substrate

Potential Applications:

-Functional coatings

-Biocompatible film

-Nanoelectronics

TRL: 3

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Category
Chemicals & Advanced Materials/Coatings, Adhesives & Sealants
Semiconductors/Fabrication & Process Technologies
Materials Science & Nanotechnology/Nanomaterials & Nanostructures

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