Supporting information

STRUCTURE AFFINITY OF LANGMUIR MONOLAYER AND CORRESPONDING LANGMUIR-BLODGETT FILM REVEALED BY X-RAY TECHNIQUES

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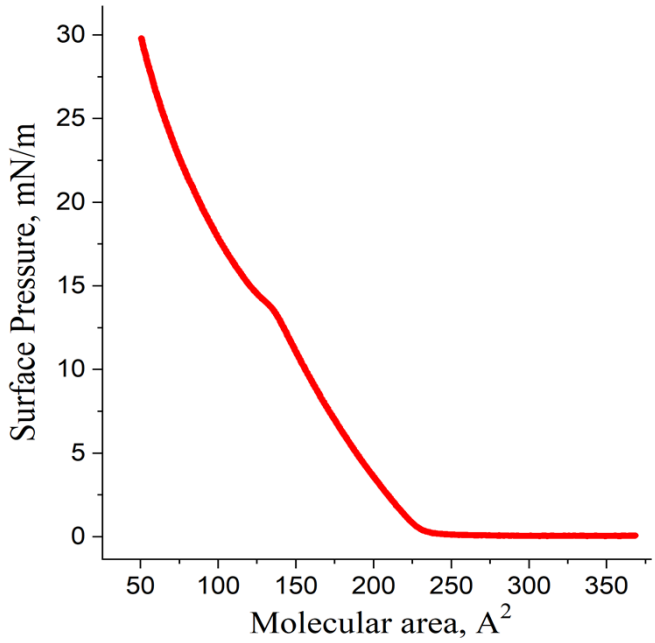
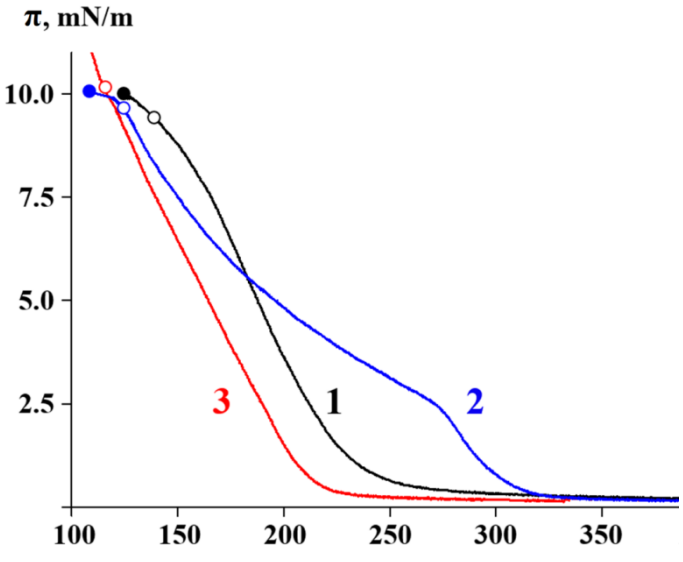
Compression isotherms of HCS monolayers



a)



b)

Fig. S1 a − The compression isotherm of HCS at pure water subphase over a wide range of area variation; b − compression isotherms of HCS monolayers formed on (1) pure water, (2) 1 mM barium perchlorate solution, (3) 0.25 mM mercury perchlorate solution. The points in which XRR measurements were carried out are indicated by hollow dots for initial subphases and by solid ones after an introduction of Hg^{2+} ions in two-stage experiments. For a full description of this figure, refer to the article [17]

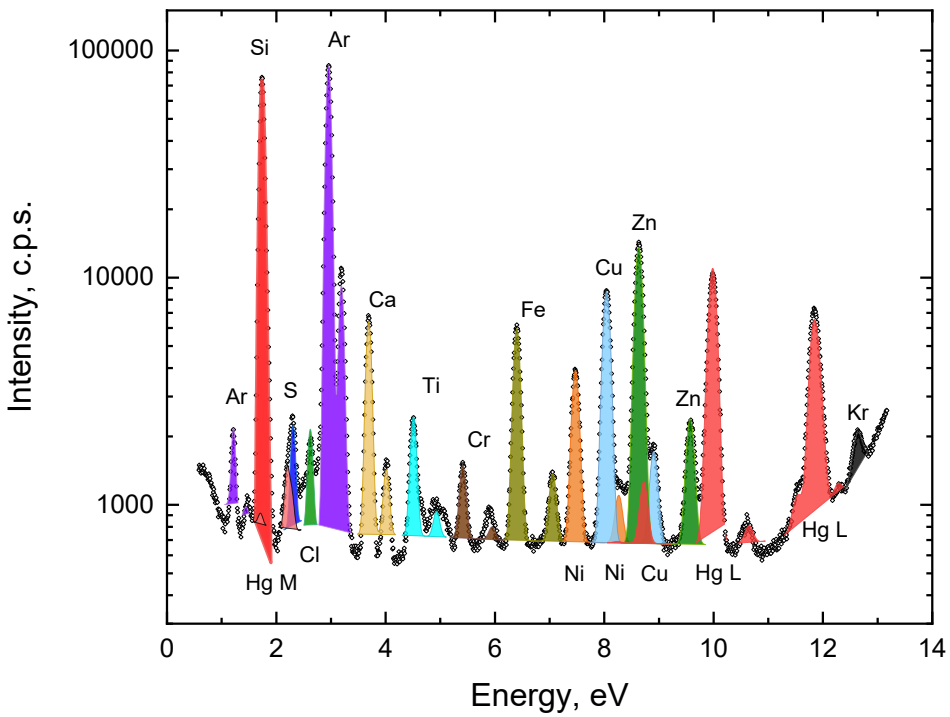


Fig. S2. Experimental and simulated fluorescence spectra of HCS film formed from monolayer deposited onto pure water with $HgClO_4$ injection after compression. The scattering angle of exciting X-ray radiation was near total external reflection angle.

X-ray reflectivity. Synchrotron radiation was provided by the ESRF at the ”Soft Interfaces and Coherent Scattering beamline” ID10 [1] for the *in situ* joint XRR and UV-Vis investigations of studied Langmuir monolayers with a photon energy of 22 keV, corresponding to a photon wavelength of 0.564˚Å. In the ID10 setup, the X-ray beam passes the shutter to the optics hutch. To minimize air scattering, it continues through an evacuated flight path with kapton windows after which it hits the adaptable attenuator wheel (Al). This component reduces the X-ray intensity at small angles in order to avoid radiation damage of the organic surface and detector saturation. After being reflected from the sample surface, the X-rays travel through another flight path until eventually hitting the point detector. The counting time per point was set to 0.3 s, while the sample is constantly positioned under helium flow to minimize oxidation of the monolayer.

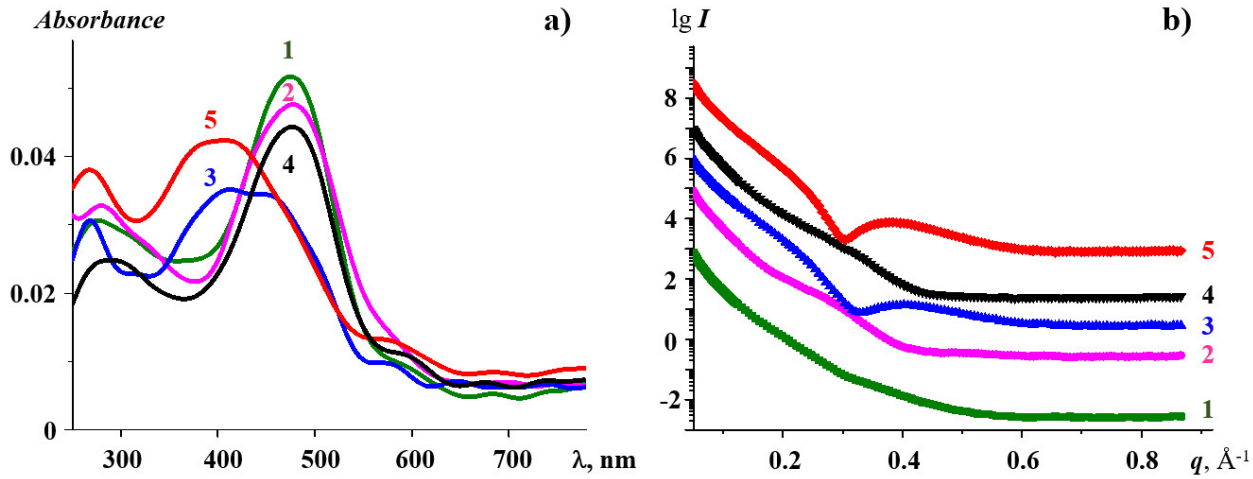


Fig. S3. UV-Vis reflection-absorption spectra (a) and X-ray reflectometry curves (b) of HCS monolayers at surface pressure of 10 mN/m on the surface of (1) pure water, (2) 1 mM barium perchlorate solution, (3) 0.25 mM mercury perchlorate solution, and after introduction of 0.25 mM of mercury under preliminary compressed monolayer (10 mN/m) into (4) pure water and (5) barium-containing subphases.

1. Smilgies, D.-M.; Boudet, N.; Struth, B.; Konovalov, O. *J. Synchrotron Radiat.* **2005**, *12* (3), 329–339.