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Molecularly thin metal organic framework (MOF) film at air-water interface: Fabrication and buckling under compression[1] PRITAM MANDAL, SAHRAOUI CHAIEB, King Abdullah University of Science and Technology (KAUST), Thuwal, KSA — A metal organic framework (MOF) - a hybrid of inorganic (metal) nodes and organic linkers - is an emerging class of highly crystalline porous materials that provide an extremely high surface area/volume ratio making them very suitable candidates in selective separation, filtration and storage of gases. Though MOFs are usually produced as powders, for many applications such as selective gas separation and filtration, MOFs as flat membrane is the most appropriate candidate. To our knowledge no large-scale fabrication of 2D MOFs has been reported. In this work, we prepared large area MOF film at an air/water interface and employed Brewster angle microscopy (BAM) to directly image the film-formation (surface pressure during and after the film-formation was tracked, although this measurement for a solid film is not accurate due to the elasticity of the film). Metal-ligand coordination was confirmed through FTIR results. Surface morphology as seen via scanning electron microscopy (SEM) shows the film was smooth over several hundred microns. Finally, we discuss the buckling/fracture of the MOF film due to compression by two symmetrically movable barriers, which hinted to the existence of a solid molecularly thin film.

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