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Calixarene "flowers" blossoming captured with cryoTEM imaging

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We are presenting transmission electron microscopy (TEM) imaging as an advanced tool for characterization freestanding crystalline metalorganic networks (MONs) [1]. As an example of creation of ultrathin material, the two-dimensional (2D) layer of the monomolecular thickness amphiphilic derivatives of calix[4]arenes are selected [1, 2]. The methyl-carboxy-functionalized calix[4]arenes can undergo mono to bilayer transition from nucleated and gradually grown second layer islands. The TEM imaging performed in the low dose mode and at cryo-conditions allows for obtaining micrographs capturing observation of this process on freestanding membranes suspended over lacey-carbon-covered copper grids.

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References:

1. M. Moradi, N.L. Opara et al., Sci. Adv. 5 (2019), eaav4489, "Supramolecular architectures of molecularly thin yet robust free-standing layers",
2. M. Moradi, N.L. Opara et al., submitted to Angew. Chem. (2019), "Kinetically controlled mono- to bi-layer transition in 2D metal-organic networks".

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