Supporting Information for the Article

**Deposition of Microcrystalline \([\text{Cu}_3(\text{btc})_2] \) and \([\text{Zn}_2(\text{bdc})_2(\text{dabco})]\) at Alumina and Silica Surfaces Modified with Patterned Self Assembled Organic Monolayers:**

**Evidence of Surface Selective and Oriented Growth.**

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**Figure S1.** Preparation of patterned COOH/CF$_3$-terminated SAMs at the SiO$_2$ surface of silicon(100) wafers and deposition of [Cu$_3$(btc)$_2$] (1) from solvothermal mother solutions.
Figure S2. Cross section and top view scanning electron microscopy images of [Cu$_3$(btc)$_2$] thin films on sapphire surfaces. A difference in the grown crystals on c-plane and the rough surface is clearly visible. The grown crystals on the rough side are up to six times larger. (a) top view and (b) cross section image of the grown crystals on the polished site and (c) top view and (d) cross section image of the grown film on the rough side.
Figure S3. Optical images of a dehydrated [Cu₃(btc)₂] film on sapphire substrates before (left) and after (middle) exposition to the vapour of the deep red MOCVD precursor [(η⁵-C₅H₅)Pd(η³-C₃H₅)]. Subsequent treatment of the loaded film with UV-light results in a colour change to black (right), indicating the formation of Pd@[Cu₃(btc)₂].

Figure S4. XRD patterns of the systems [Cu₃(btc)₂] at sapphire (B) in comparison to the reference pattern (A). The pattern proves that the MOF system is still intact. No characteristic palladium reflexes are observed. The substrate specific Al₂O₃ (0006) (2θ = 41.6°) reflex is marked, too.
**Figure S5.** Image of the [Cu₃(btc)₂] unit cell. Due to the attachment of the crystals to the surface over the (111) or the (100) lattice face these once are marked, too. In both cases the MOF interacts with the Cu₂ unit.
Figure S6. Images of the [Cu_3(btc)_2] unit cell. The (100) plane contains the Cu_2 unit and the weakly coordinated H_2O molecules (present under solvothermal conditions). The four btc linkers are attached to the paddle-wheel SBU out-of-plane by an angle close to 45° (above). The (111) lattice plane contains of the Cu_2 units, two of the attached btc linkers as well as the weakly coordinated H_2O. Two btc linkers interact with the Cu_2 unit almost perpendicular to the (111) plane (bottom).
**Figure S7.** Optical and Scanning electron microscopy images of [Cu$_3$(btc)$_2$] coatings on a “positive” CF$_3$/COOH (above) and a “negative” COOH/CF$_3$ patterned SAM surfaces (bottom). Crystal growth takes place on the COOH terminated parts only, whereas the CF$_3$-terminated areas are nucleation passive. The anchored crystals show ideal octahedral shapes and are preferentially oriented via the (111) face.
Figure S8. XRD patterns of the systems (A) [Zn₂(bdc)₂(dabco)] (powder) and (B) Pd@[Zn₂(bdc)₂(dabco)] at Si/SiO₂. The substrate specific Si (200) (2θ = 32.96°) reflex is marked. No Pd reflexes (expected around 40.11°) are observable. The MOF system is still intact.