## **Electronic Supplementary Information:**

## Crystal growth of MOF-5 using secondary building units studied by *in situ* atomic force microscopy

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**Fig. ESI1.** The calculated (red) and observed (black) powder X-ray diffraction pattern of MOF-5 [ $Zn_4O(bdc)_3$ ]. Tick marks (red) located at the calculated position of the diffraction peaks for MOF-5 [ $Zn_4O(bdc)_3$ ].



Fig. ESI2. SEM of representative MOF-5  $[Zn_4O(bdc)_3]$  substrate crystals.



Fig. ESI3. The calculated (red) and observed (black) powder X-ray diffraction pattern of basic zinc benzoate SBU precursor  $[Zn_4O(O_2CC_6H_5)_6]$ . Tick marks (red) located at the calculated position of the diffraction peaks for basic zinc benzoate SBU precursor  $[Zn_4O(O_2CC_6H_5)_6]$ .