

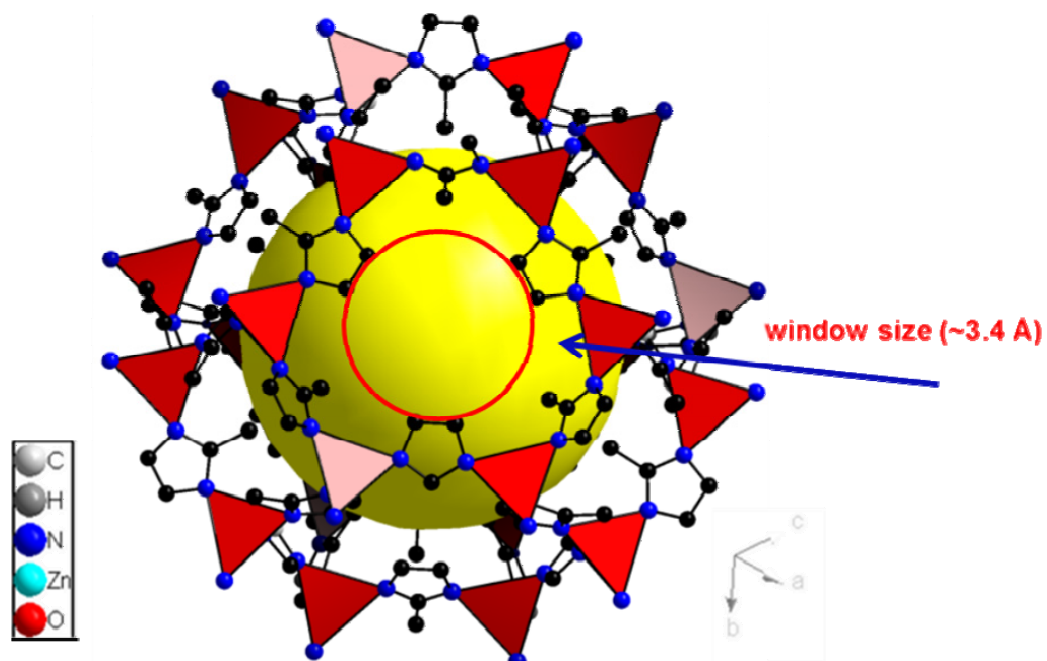
## **The liquid phase epitaxy method for the construction of oriented ZIF-8 thin films with controlled growth on functionalized surfaces.**

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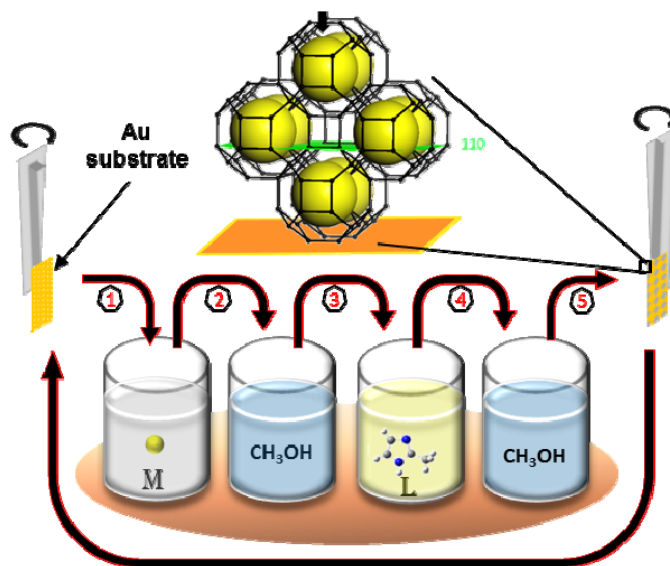
**Scheme S1.** Representation of the ZIF-8 crystal structure along the six-membered ring with its window size depicted.



## Experimental Section

Thin film preparation: Gold substrates (200-nm Au/2-nm Ti evaporated on Si wafers) were first functionalized with self-assembled monolayers (SAMs) of 11-mercaptoundecanol (MUD). The freshly prepared substrates were then immersed subsequently in a 100 mM of  $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  methanol solution for 2 minutes and in a 50 mM 2-Methylimidazole (mIm) methanol solution for 3 minutes at room temperature. Between each step the substrates were rinsed with methanol and dried in a nitrogen stream. Gold substrates were also functionalized with SAMs of 16-mercaptohexadecanoic acid (MHDA). The freshly prepared substrates were then immersed subsequently in a 100 mM of  $\text{Zn}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$  methanol solution for 2 minutes and in a 50 mM 2-Methylimidazole (mIm) methanol solution for 3 minutes at room temperature. Between each step the substrates were rinsed with methanol and dried in a nitrogen stream (Fig. S1).

**Fig. S1** Schematic representation showing the concept of the LPE method for the growth of ZIF-8 thin films on a SAM-functionalized Au substrate. The substrate is immersed in a metal ion solution (1), washed with solvent (2), immersed in an organic ligand solution (3), and washed with solvent (4). The process is repeated to grow more cycles (5).



**Fig. S2** The thickness of the ZIF-8 thin film grown with the LPE method versus the number of growth cycles.

