

On-Surface Boroxine 2D Covalent Organic Frameworks: a Comprehensive Analysis

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Two-dimensional covalent organic frameworks (2D COFs) are a type of porous, organic and crystalline 2D material.^[1] Although they display very interesting properties, the industrial application of 2D COFs is still limited by the poor control over their synthetic and interfacing processes. Here, we describe a simple protocol to prepare large and defect-free single-layer 2D COFs under mild conditions, at room temperature and at the liquid-graphite interface. Using scanning probe microscopy (SPM) and a variety of spectroscopy techniques, we reveal at the molecular level the impact of monomer concentration, solvent, temperature, and time, bringing mechanistic insight to on-surface COF formation (Figure 1).^[2]

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References

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- [2] N. Bilbao, C. Martín, G. Zhan, M. Martínez-Abadía, A. Sanz Matías, A. Mateo-Alonso, J.N. Harvey, M. Van

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Figures

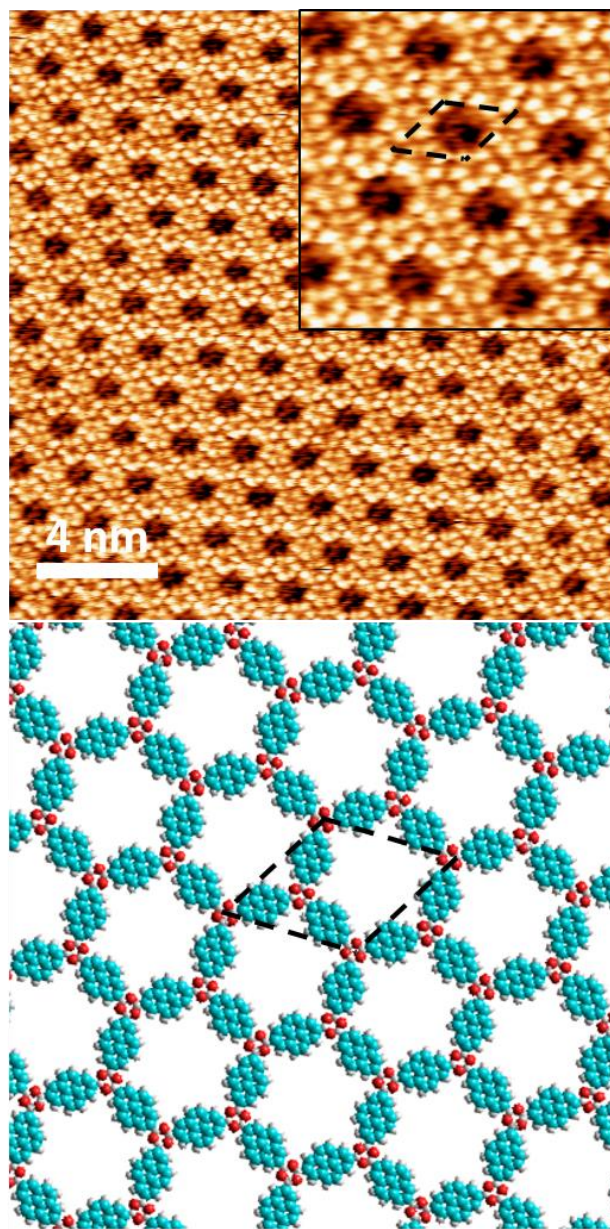


Figure 1: High-resolution STM image of a boroxine COF on graphite and corresponding molecular model.