

Supporting Information

Oxygen orders differently under graphene: new superstructures on Ir(111)

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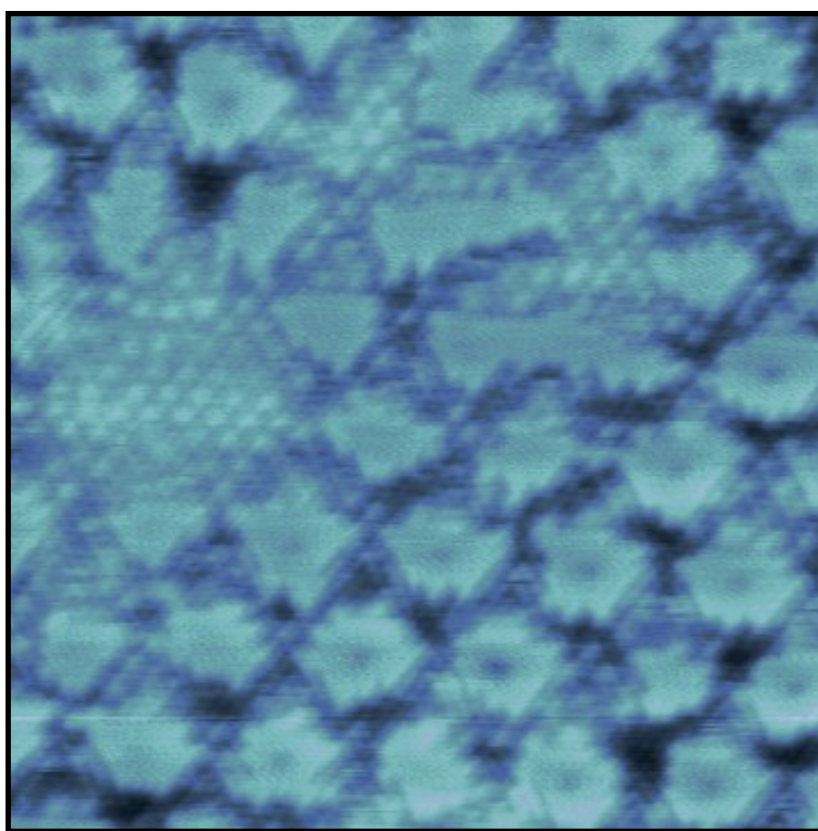


Fig. S1. STM topograph of Gr/Ir(111) after oxygen intercalation by exposing to 1.1×10^3 L at 2.4×10^{-6} mbar with the sample at 530K. The graphene coverage is about 0.8 ML. Bright areas of triangular shape with the periodicity of the moiré pattern coexist with small patches of the O-(2x2) superstructure. As already discussed in the manuscript, these bright areas are probably not intercalated by oxygen. Such inhomogeneity in the Gr/O/Ir(111) interface could be related to the inhomogeneity of the interaction of the graphene monolayer and the underlying Ir(111) substrate. Tunneling parameters: $V_s = +0.64$, $I_T = 0.2$ nA; size: 14×14 nm².

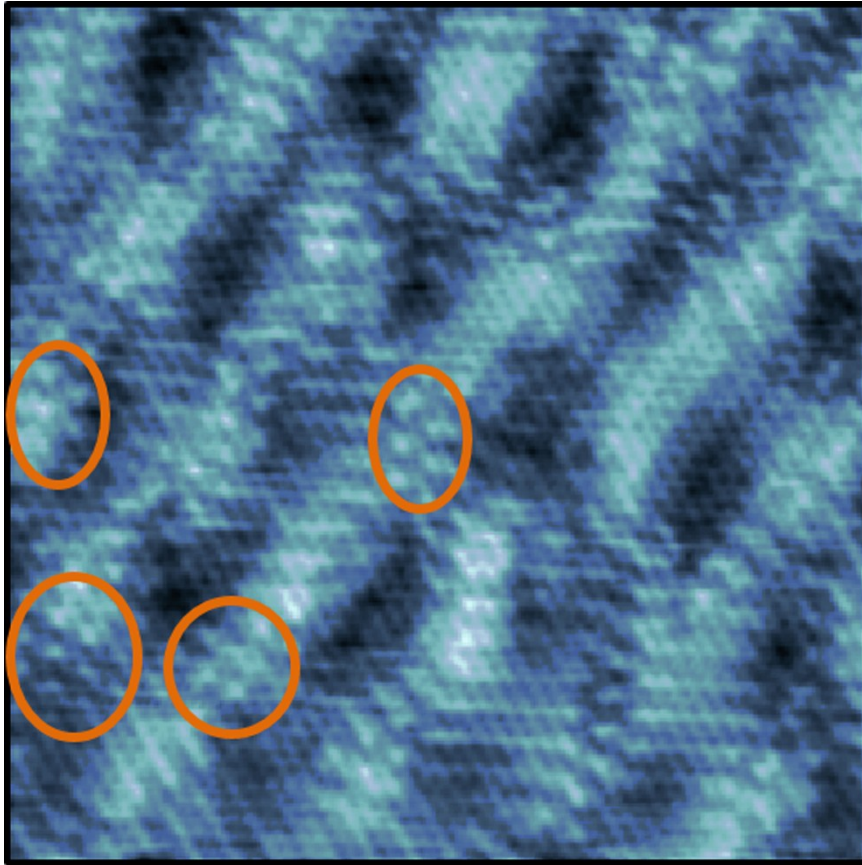


Fig. S2. STM topograph of Gr/Ir(111) after oxygen exposure to 3.4×10^3 L of molecular oxygen at a partial pressure of 7.6×10^{-6} mbar with the sample at 530K. The graphene coverage is about 0.8 ML. Small patches of O-(2 \times 2) (some of them encircled in orange) and O-(2 \times 1) superstructures coexist. Tunneling parameters: $V_s = +0.29$, $I_T = 0.3$ nA; size: 10.2 \times 10.2 nm².