Title:	Dynamic surface modification due to effusion of Na in Na2IrO3
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Abstract:	The honeycomb lattice iridate Na2IrO3 shows frustrated magnetism and can potentially display Kitaev-like exchange interactions. Recently, it was shown that the electronic properties of the surface of crystalline Na2IrO3 can be tuned by Ar plasma treatment in a controlled manner, leading to various phases of matter ranging from a fully gapped to a metallic surface, where the possibility of a charge-density wave like transition has been suggested. Here, through direct imaging with an atomic force microscope (AFM) in air, we show that the surface of crystalline Na2IrO3 evolves rapidly as elemental Na effuses out of the interleave planes to the surface and undergoes sublimation, thereby disappearing from the surface gradually over time. Using conductive AFM, we recorded a series of topographs and surface current maps simultaneously and found that the modification of the surface leads to change in the electronic properties in a dynamic fashion until the whole system reaches a dynamic equilibrium. These observations are important in the context of the exotic electronic and magnetic properties that the surface of Na2IrO3 displays.
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