Contribution ID: **99** Type: **Talk**

【211】UHV Growth and Characterization of Ga2O3 on Cu2O(111)

Tuesday, 31 August 2021 16:30 (15 minutes)

Cu2O, a natural p-type semiconductor with a direct bandgap of 2.17 eV, has a conventional conduction band position slightly above the water reduction potential and offers a low-cost photocathode for unassisted water splitting devices . Overlayers of n-type Ga2O3 can be employed to reduce the interfacial recombination effects due to the adequate conduction band alignment with Cu2O, leading to an increase in photovoltage. In this work we investigate the electronic properties and the morphology of surfaces and interfaces of UHV-grown Ga2O3 on Cu2O(111) with surface science methodology. In particular, we study the effect of post-annealing treatments and the influence of a reconstruction of the Cu2O(111) substrate prior to Ga2O3 deposition.

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Session Classification: Surfaces, Interfaces and Thin Films

Track Classification: Surfaces, Interfaces and Thin Films