Real-time oxide evolution of copper protected by graphene and boron nitride barriers - DTU Orbit (02/11/2019)

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Applying protective or barrier layers to isolate a target item from the environment is a common approach to prevent or delay its degradation. The impermeability of two-dimensional materials such as graphene and hexagonal boron nitride (hBN) has generated a great deal of interest in corrosion and material science. Owing to their different electronic properties (graphene is a semimetal, whereas hBN is a wide-bandgap insulator), their protection behaviour is distinctly different. Here we investigate the performance of graphene and hBN as barrier coatings applied on copper substrates through a real-time study in two different oxidative conditions. Our findings show that the evolution of the copper oxidation is remarkably different for the two coating materials.

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