



Graduate Students Seminar

Department of Chemistry

Sunday April 11, 2021

Time 16:00

ZOOM

<https://us02web.zoom.us/j/85868664857?pwd=VVVLWFhvZWczQ3F0VW5jQlZyWEhZdz09>

Meeting ID: 858 6866 4857

Passcode: 993633

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Supervised by: Prof. Menny Shalom

Mediated Growth of Carbon Nitride Films via Spray-Coated Seeding Layers for Photoelectrochemical Applications

Water-splitting photoelectrochemical cell (PEC) is a promising approach to produce clean hydrogen fuel from sunlight and water. Recently, polymeric carbon nitride (CN) has emerged as an alternative semiconductor for water-splitting PECs, thanks to its tunable band gap, suitable energy band positions, chemical stability, and low cost. However, despite recent progress in growth of CN films, the exploitation of CN in water-splitting PECs is still challenging due to their poor electronic conductivity, and the difficulty of coating uniform, intimately connected CN layers on substrates. This is especially the case for gas-phase deposition methods (e.g., CVD) since solid-gas interactions between the substrate and the CN monomers are required for the reaction to occur.

Here we introduce a new facile method to directly grow CN films on substrates, based on the deposition of a seeding layer of CN monomers by spray coating technique, followed by vapor deposition during thermal treatment. The seeding layer provides nucleation sites promoting the growth of a homogenous CN layer that is strongly attached to the substrate, leading to enhanced photoelectrochemical performance of the newly obtained CN electrodes.



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