



Abstract: Performance evaluation of Si-based photoanodes in solar to hydrogen devices

Author: Prof. Guido Mul (UT)

In this presentation I will address recent achievements of the Twente University in the development of solar-fuel processes. Focus will be on some recent developments in functionalizing Si-based photoelectrochemical devices. We attempted to improve the state-of-the-art performance by controlled deposition of catalytic entities, such as BiVO_4 and WO_3 , and by comparing flat and pillared geometries. We also addressed evaluation of mass-transfer limitations and pH gradients near electrode surfaces, and introduced well-defined porosity to minimize pH gradients. I will also showcase some recent findings in the formation and dynamics of gas bubbles, optimization of which can lead to improved performance of photoelectrochemical devices.