

# The growth and photochemical activity *of* hematite films on perovskite substrates

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## COMMITTEE:

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For photochemical hydrogen production to reach acceptable efficiencies, semiconductor photolysis systems utilizing visible light must be developed. I will presents results for the photochemical activity of iron-based materials and structures. Hematite,  $\alpha\text{-Fe}_2\text{O}_3$  and absorbs light in the visible range, and is a promising photolysis catalyst. The photochemical reactivity of bulk  $\text{Fe}_2\text{O}_3$  and thin  $\text{Fe}_2\text{O}_3$  films on single crystal and polycrystalline substrates will be reported. The effect of substrate and film orientation on photochemical activity will be reported. I will also discuss the growth of thin  $\text{Fe}_2\text{O}_3$  films via pulsed laser deposition on single crystal and polycrystalline substrates, and in particular, the alignment of close packed networks during film growth. 