Controlling catalysts for CO$_2$ photoreduction to fuels

PI: Notestein, Justin (McCormick, ChBE)

**Challenge**
The transformation of CO$_2$ into fuels using sunlight and man-made materials (artificial photosynthesis) would be a breakthrough route to making carbon fuels sustainable, but is lacking the materials to efficiently catalyze the process.

**Approach**
New, and highly controlled synthesis of TiO$_2$-SiO$_2$ materials has allowed systematic tuning of catalyst physical properties.

**Achievement**
Discovery of more active catalysts for methane (CH$_4$) production from CO$_2$ and an improved physical understanding.