Samantha Lucara: Mechanical & Industrial Engineering
Mentor: Roberta Amendola, Madisen McCleary (PhD student at MSU) -- Mechanical and Industrial Engineering
Investigation of the Effects of 5% Hydrogen Gas versus Pure Hydrogen Gas on the Reduction of a Solid Oxide Fuel Cell (SOFC) anode

The aim of this research is to compare the kinetics of the reduction process of an Aluminum Titanate (ALT) doped SOFC anode from oxidized state NiO/YSZ to cermet material Ni/YSZ when 5% hydrogen gas is used versus pure hydrogen. Previous research showed that ALT doped samples require a much higher reduction time when compared to the undoped material. Fully reduced anodes are needed to increase power efficiency in the fuel cell and high reduction times are not desired or suitable for industrial or civil applications. This research contributes to clarify the reduction mechanism and how it can be optimized.