

CO₂ Conversion over Supported CoNi Bimetallic and CoNiPd

Trimetallic Catalyst via Dry reforming with Methane

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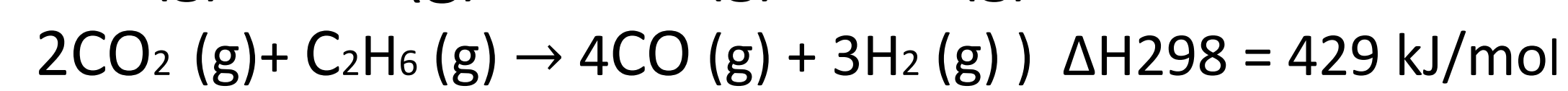
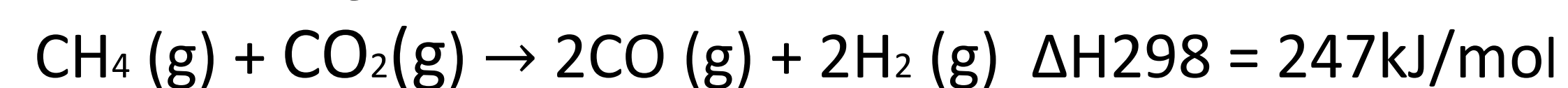
Objective

The primary objective of this project is to develop novel cobalt based catalysts to enhance catalytic conversion of CO₂ by methane into value added chemicals and fuels

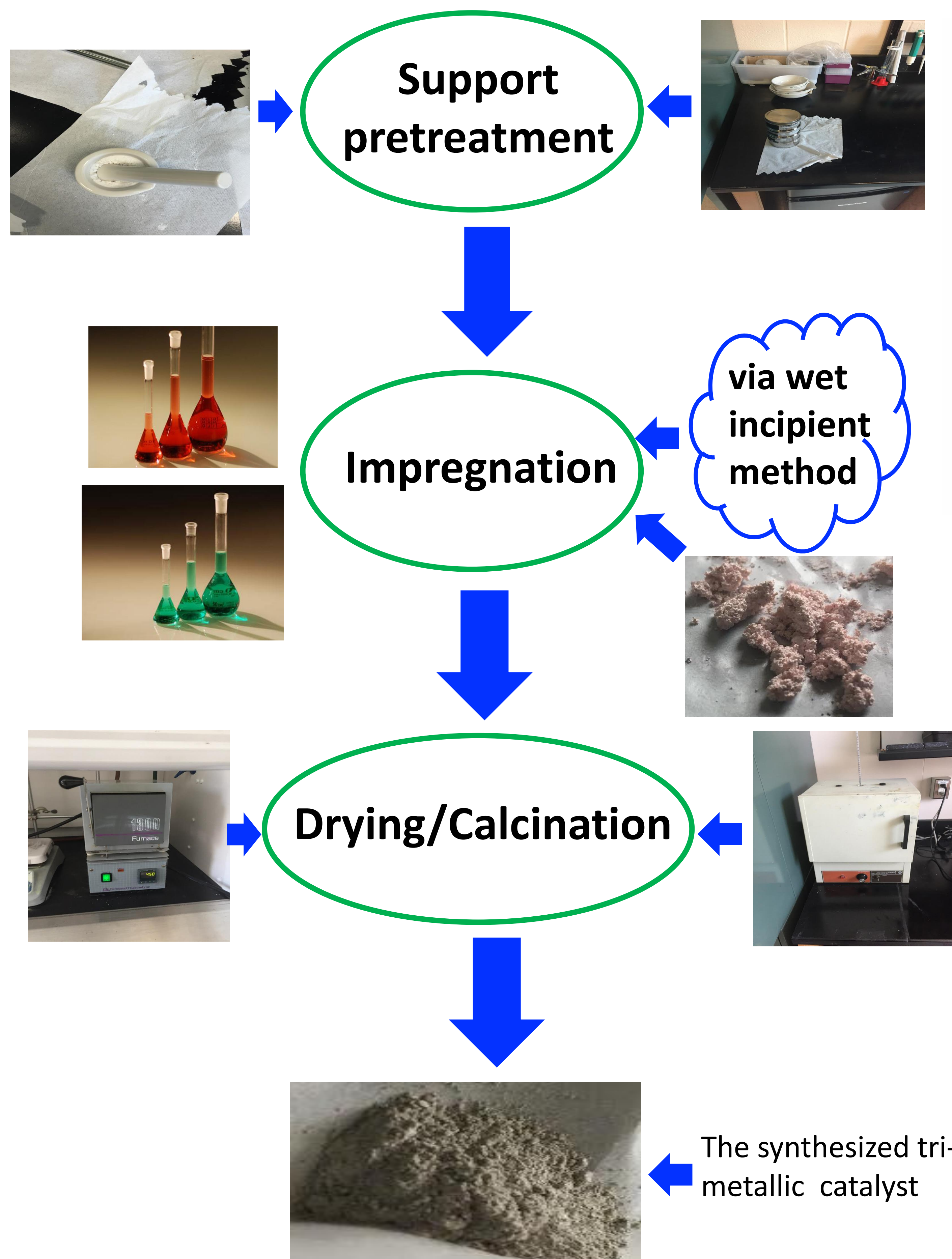
Background

Greenhouse gas emission is a problem for the earth, and is causing warming of the climate, and acidification of the oceans

Chemistry



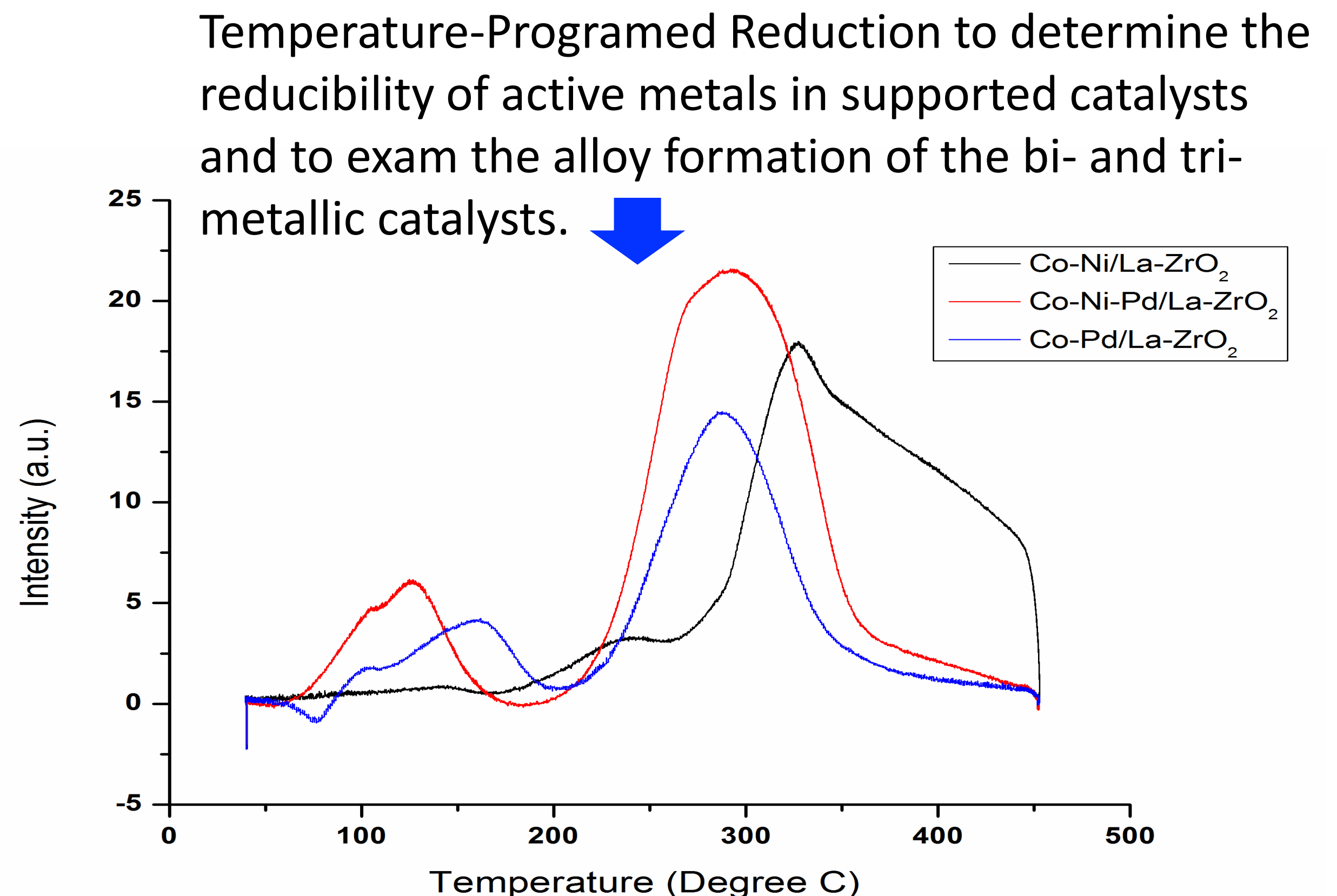
Experiments



Catalyst characterization

Catalysts	CO Uptake Value (μmol/g)
Co-Ni/La-ZrO ₂	13.596
Co-Pd/La-ZrO ₂	23.827
Co-Ni-Pd/La-ZrO	43.428

CO Chemisorption to determine active sites on catalysts



Catalyst Testing



The flow-bed reactor with controlled CO₂ and CH₄ flow rate

Future work

- Test the performance of the catalyst using a flow bed reactor.
- Characterize the catalyst for BET, TEM, XPS, and XRD to establishing the relationship between activity and property