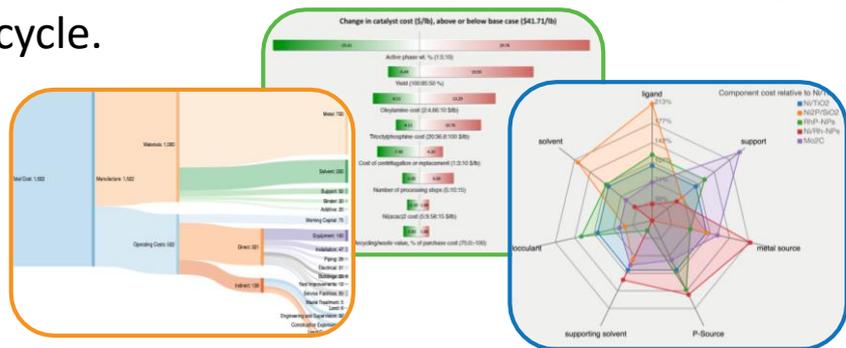


Catalyst Cost Model

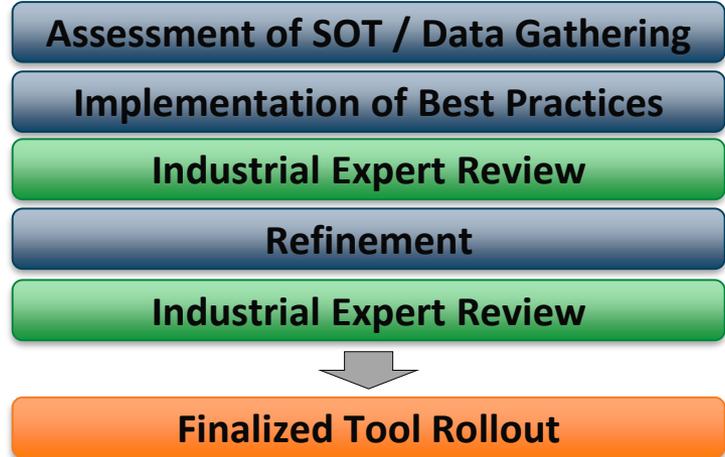


Goal: Develop a free and publicly-available spreadsheet and web-based **catalyst cost estimation tool** to enable rapid and informed cost-based decisions in the research and commercialization of catalysts.

Impact: The catalyst cost model helps to reduce the risk associated with the commercialization of biomass conversion processes by enabling catalysis researchers to understand the economics of novel catalyst production at early stages in the development cycle.



Research Approach:



Catalyst Cost Model: Instructions

CCM Overview

- > The Catalyst Cost Model (CCM) is organized into sequential sheets that each cover a component of a catalyst cost estimate.
- > These sheets are numbered 1-9 and can be navigated using the tabs at the bottom of the screen.
- > In general, it is best to proceed from left to right through these sheets when constructing a model, as later sheets depend on the output of earlier sheets.
- > Some sheets have been protected but there is no password if you want to link.
- > The meaning of the color formatting currently in use in the CCM is given in the formatting key below. In general, cells designed for user input are colored red or orange (when empty) or white (when complete), while CCM-calculated cells that should not be modified are grey.
- > Cells with a red outline and question mark contain notes on the input cell to their left.
- > While the procedures allowing sensitivity analysis in the CCM are still under development, the input cells are already in place on each sheet. For example, the impact of uncertainty in a raw material price could be studied. See Sensitivities key below.

Color Formatting Key

Input Formats

- Required free entry: [Red box] % [Red box] hours
- Optional free entry: [White box]
- Required drop-down entry: [Orange box]
- Optional drop-down entry: [White box]
- Completed input: [Grey box] 5 %

Other Formats

- CCM-calculated value: \$30,000
- Key output: \$150,000

Sensitivities Key

- > The input cells for future sensitivity analysis (evaluating the impact of changes to input values on the ultimate catalyst price) to be built into the CCM have already been included in the current prototype.
- > At the top of most sheets in the CCM, the text "Show/Hide Sensitivity Inputs Using +/- above" and associated +/- buttons will indicate the presence of sensitivity inputs.
- > In some cases, CCM-suggested low and high scenario values are pre-supplied.
- > Once expanded, the base, low, and high scenario input cells are indicated as shown below:

Inputs	Base	Low	High
Input 1	5	3	8 %
Input 2	10	8	15 years

0 Instructions | 1 Global Inputs | 2 Materials | 3 Equipment | 4 Utilities | 5 Capital | 6 Operating | 7 DCF