

Abstract Submitted
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Simulation of Acid-Base Reactions in a Microscale Confined Impinging Jet Reactor JEN OLSEN, LUCAS GRIFFITH, MICHAEL OLSEN, Iowa State University, RODNEY FOX, Iowa State University — Numerical simulations were performed of reactive mixing in a microscale confined impinging jets reactor (CIJR). A simple acid-base reaction was modeled and solved for a laminar flow case. Local pH throughout the reactor was determined as a function of hydrogen and hydroxide mixture fraction, and this relationship was used to generate a pH field that could be compared with experimental results. An experimental visualization of the acid-base reaction was performed in the CIJR with phenolphthalein used as a pH indicator. Visualization images of the actual flow were then compared with the predictions of the simulation. Good agreement was observed between the experiment and the simulation. Future work will include adding a turbulence model to the simulation.

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