

- Developed testing parameters and methodology for future iterations of the model, and applied to the current model to identify potential areas for further improvement

Publications

Under Review (submitted Nov 7, 2016): Murphy, B.M., Letterio, M. P., & Xu, B. (2016) Catalyst Deactivation in Pyridine-Assisted Selective Dehydration of Methyl Lactate on NaY.

Murphy, B. M., Letterio, M., P., & Xu, B. (2016) Selectivity Control in the Catalytic Dehydration of Methyl Lactate: The Effect of Pyridine. *ACS Catalysis*, 6 (8), pp. 5117-5131

Murphy, B. M., Letterio, M. P., & Xu, B. (2016) Catalytic Dehydration of Methyl Lactate: Reaction Mechanism and Selectivity Control. *Journal of Catalysis*, 339, pp. 21-30

Murphy, B. M., Davis, M.E., & Xu, B. (2015). The Effect of Adsorbed Molecule Gas-Phase Deprotonation Enthalpy on Ion Exchange in Sodium Exchanged Zeolites: an In Situ FTIR Investigation. *Topics in Catalysis*, 58 (7), pp. 393-405

Popov, B.N., Xie, T., Kim, T., Jung, W., Kriston, A., Murphy, B. M., Gamliel, D., & Ganeson, P. (2012) Development of Ultra-Low Pt Alloy Cathode Catalyst for PEM Fuel Cells. *ECS Transactions*, 50 (2), pp. 773-785

Selected Conference Presentations and Posters

Murphy, B.M.; Letterio, M. P.; Xu., B. "Mechanistic study of the catalytic dehydration of methyl lactate leading to rational catalyst design." 252nd ACS National Meeting, 2016, Philadelphia, PA, Aug 21-26

Murphy, B.M.; Letterio, M. P.; Xu., B. "Highly Active and Selective Catalysts for the Dehydration of Lactates to Acrylates." Gordon Research Seminar & Conference: Catalysis, 2016, New London, NH, Jun 12-17

Murphy, B.M.; Letterio, M.P.; Xu., B. "Selectivity Control in the Catalytic Dehydration of Methyl Lactate over Zeolites." Catalysis Club of Philadelphia, 2015, Wilmington, DE, Oct 15

Murphy, B.M.; Xu, B. "Reaction Mechanism of Catalytic Dehydration of Methyl Lactate over Zeolites." 24th North American Catalysis Society Meeting, 2015, Pittsburgh, PA, Jun 14-19

Murphy, B.M.; Xu, B. "Lactate Dehydration to Acrylate Catalyzed by Active Sites Generated In-Situ." Center for Catalytic Science and Technology Annual Research Review, 2014, Newark, DE, Oct 16

Honors and Awards

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| Catalysis Club of Philadelphia Annual Poster Competition, Winner | Nov. 2015, Nov. 2016 |
| Robert L. Pigford Memorial Graduate Fellowship (University of Delaware) | Aug. 2013 |
| David Lee Preddy Award for Chemical Engineering (University of Virginia) | May 2013 |
| Raven Society (University of Virginia) | Nov. 2012 |
| Omegi Chi Epsilon Chemical Engineering Honor Society (University of Virginia) | Nov. 2011 |