

Phenylisocyanide Ligand Synthesis and Coordination to Cobalt as a Catalyst for Dimerization of Linear Alpha Olefins

Colleen McAloon, Class of 2023

Linear alpha olefins (LAOs) are used as precursors to various shampoos, lubricants, and detergents, and are essential within the petrochemical industry.¹ This project aims to develop a cationic cobalt catalyst for the linear dimerization of LAOs. The current catalyst yields an unfavorable branched to linear product ratio, which is due to the steric bulk of the supporting ligand.² To optimize the formation of the linear product, I synthesized a less bulky supporting ligand using 4-substituted phenylisocyanides.

References:

¹ Lappin, G. R., *Alpha Olefins Applications Handbook*. Marcel Dekker: New York, 1989.

² Broene, R. D.; Brookhart, M.; Lamanna, W. M.; Volpe, A. F., Cobalt-
-Olefins to Give Linear
- Olefin Products. *Journal of the American Chemical Society* 2005, *127* (49), 17194-17195.

³ Morris, J. Phenylisocyanide Ligand Synthesis and Coordination to a Cobalt Catalyst for Dimerization of Linear Alpha
Olefins. Bowdoin College, Brunswick, ME, 2019.