



Ryan J. Trovitch




School of Molecular Sciences

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Making Materials with Manganese

Our group is interested in developing non-toxic and environmentally-responsible transition metal catalysts that be used for organic transformations. Hydrosilylation has been a reaction of interest since it is relied on for the industrial production of silicone coatings, adhesives, and rubbers. Sustainable base metal alternatives to commonly used platinum hydrosilylation catalysts are desired due to the cost and toxicity of this precious metal. To address this challenge, we recently developed an inexpensive manganese catalyst that is capable of preparing the silicone polymers that are used in contact lenses and smartphone screen coatings. Manganese based polymerization reactions that involve the dehydrogenative coupling of amines to silanes have also been developed. This talk will cover several synthetic transformations that are enabled by highly-active manganese catalysts, and potential areas of collaboration will be discussed.

Abundance in Earth's Crust (in mg/kg):

	6	7	8	9	10
 3d	Cr 102 mg/kg	Mn 950 mg/kg	Fe 56,300 mg/kg	Co 25 mg/kg	Ni 84 mg/kg
 4d	Mo 1.2 mg/kg	Tc Not Available	Ru 0.001 mg/kg	Rh 0.001 mg/kg	Pd 0.015 mg/kg
 5d	W 1.25 mg/kg	Re 0.0007 mg/kg	Os 0.0015 mg/kg	Ir 0.001 mg/kg	Pt 0.005 mg/kg

Prof. Trovitch received a B.S. degree in chemistry from the Honors Program at King's College (PA) in 2004 and a Ph.D. in inorganic chemistry from Cornell University (2009). He joined Los Alamos National Laboratory as a postdoctoral research associate in 2008 and was later named a Glenn T. Seaborg Postdoctoral Fellow. Ryan joined ASU's Department of Chemistry & Biochemistry (now the School of Molecular Sciences) in 2012 and his group is working to develop homogeneous transition metal catalysts for energy- and sustainability-driven initiatives. Prof. Trovitch has received a U.S. National Science Foundation CAREER Award and he currently serves on the Green Chemistry Commitment Advisory Board.