Title: “Reversible Low Temperature CH to CO Conversions: A Lower Cost, Cleaner Paradigm for Materials, Power and Energy Storage without Oil.”

Abstract: Today, with fossil fuels reaching new record prices and escalating concerns about Global Warming from man-made carbon dioxide emissions, it is imperative that we develop: A) alternatives to petroleum, B) more efficient and less expensive technologies for the production of energy and materials and C) more efficient and less expensive methods to store and release energy on demand. In this talk, we will show that the key to addressing all three of these challenges is developing next generation, low temperature, and low cost, catalytic chemistry for the reversible conversion of C-H to C-O bonds. The development of such chemistry could allow Natural Gas to replace oil, dramatically improve the efficiency for the production of energy and materials from fossil fuels and allow the efficient storage of energy from diverse sources such as solar, wind, wave and nuclear through the efficient conversion of carbon dioxide to liquid hydrocarbons such as methanol.