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Green syntheses to green fuel. Lessons that translate from one to the other

Key lessons learned during the development of green chemistry over the last 25 years have several direct ties to green energy chemistry. Among these include approaches to optimize both turnover rates and product selectivity in catalytic reactions (organic transformations and energy production). Another is the systematic manipulation of oxygen chemistry (from H2O to H2O2 to O2) to avoid selectivity-deleterious and energetically-undesirable oxygen-based intermediates. A third involves paradigm development for catalyst stability. (Recall that selectivity in all catalytic reactions depends on many parameters but chief among them is retention during turnover of the geometrical and electronic structure of the catalyst itself.) A forth bridge between the 2 large research areas is incorporation of green design principles in reactor design and other aspects of the reactions.

Biography

Craig L Hill trained at MIT (PhD; Whitesides) and Stanford (NSF PD; Holm) and is the Goodrich C. White Professor of Chemistry at Emory University. He studies catalysis (green oxidations; multielectron processes, decontamination, others), mechanisms and materials. He has trained ~130 graduate students and postdocs. Google Scholar lists ~340 journal publications that are cited 20,065 times (H index = 72). Three of these already exceed 1000 citations. He has been the recipient of three ACS awards, many others and is a member of two academies

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