



Richard Eisenberg

University of Rochester

Richard Eisenberg is Tracy Harris Professor Emeritus and Professor (Research) at the University of Rochester. A native New Yorker, he received his undergraduate and graduate degrees from Columbia University. In 1973, he joined the faculty of the University of Rochester after six years as Assistant and Associate Professor at Brown University in Providence, RI. He served as Chair of the UR Chemistry Department from 1991-'94 and was named to the Harris Chair in 1996. Eisenberg's research interests are in inorganic and organometallic chemistry, photochemistry relating to solar energy conversion, and catalysis. Some of Eisenberg's specific research activities include the photogeneration of hydrogen from water, luminescent square planar complexes and their incorporation into molecular assemblies for photoinduced charge separation, the development of parahydrogen induced polarization for hydrogen addition reactions, luminescent gold and copper complexes for application in electroluminescent devices, and the design of new electrophilic catalysts for electrocyclizations and tandem organic transformations.

He has mentored more than eighty Ph.D. and postdoctoral research students. Foremost among his activities in the chemistry community, Eisenberg was the Editor-in-Chief of *Inorganic Chemistry* for twelve years, stepping down at the end of 2012. He has also served as Chair of the Inorganic Division, Chair of the Organometallic Subdivision, Chair of the Gordon Research Conference on Organometallic Chemistry and as a member of the editorial advisory boards of the *Journal of the American Chemical Society*, *Inorganic Chemistry*, *Organometallics* and *Accounts of Chemical Research*. He has been the recipient of a number of awards including the 2003 ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry and shared the 2011 ACS Nobel Laureate Signature Award in Graduate Education with his student Ping-wu Du. In 2010, he received the Lifetime Achievement Award for Graduate Education from the University of Rochester. Eisenberg was elected a Fellow of the American Association for the Advancement of Science in 2005, a Fellow of the American Academy of Arts and Sciences in 2009, and a Member of the U. S. National Academy of Sciences in 2010. He has recently become an Associate Editor for the *Proceedings of the National Academy of Sciences*.

Fuel from Water: The Light-Driven Generation of Hydrogen

This century's greatest technological challenge is the conversion of sunlight into usable energy in a sustainable, environmentally benign and carbon-neutral way on a global scale. For light to chemical energy conversion in a designed photosynthetic system, the splitting of water into its constituent elements is the key energy-storing reaction. As with natural photosynthesis, such a system relies on light absorption, charge separation, and catalysis. Recent efforts in the Eisenberg laboratory are described that focus on different components and system compatibility for the reductive side of the water splitting reaction and the visible light-driven generation of hydrogen from aqueous protons. The light absorbers in recent systems include strongly absorbing organic dyes and water-solubilized semiconductor nanoparticles. As catalysts for the generation of hydrogen, different sets of metal complexes have been investigated, including previously unstudied systems that exhibit high activity. Both the light absorbers and the hydrogen-forming catalysts are composed only of earth abundant elements. Studies are described to provide clues to initial charge transfer steps, mechanisms of H₂ generation and sources of system instability.