

## Guiding Questions for Henry Taube: Inorganic Chemist Extraordinaire

*Inorg. Chem.*, **2006**, 45, 7059-7068.

As you read the attached article, you may wish to refer to the section on redox reactions in your textbook (Miessler & Tarr's *Inorganic Chemistry*, 3<sup>rd</sup> Ed., Pearson Prentice Hall, Upper Saddle River NJ, **2004**, 440.)

The Nobel Foundation website provides additional detail regarding the work on electron transfer for which Henry Taube was awarded the 1983 Nobel Prize in Chemistry.

([http://nobelprize.org/nobel\\_prizes/chemistry/laureates/1983/index.html](http://nobelprize.org/nobel_prizes/chemistry/laureates/1983/index.html))

- What is the principal distinguishing feature of an inner-sphere electron transfer reaction?
  - How does this differ from an outer-sphere electron transfer process?
- How did Taube use isotopically enriched water to make generalizations about inert and labile ligands?
- What were the redox couples in the system which prompted Taube's investigation into the mechanism of electron transfer?
  - What physical observations formed the basis of Taube's early findings with this system?
- Sketch the bridging ligands used to investigate electronic communication between metal centers in the hetero-bimetallic systems given here.
  - What properties do these ligands have that allow them to participate in electron transfer events?
- What is meant by the terms (Robin Day) Class I, Class II and Class III?
- What is the Creutz-Taube ion?
  - Give a formal electron count and oxidation state for each metal center in this ion. Is there anything weird about this? Explain