

Discussion Group No. 6 - Current Concepts of Oxidation-Reduction  
Reactions

This group concerned itself primarily with a discussion of the usefulness and limitations of various definitions of redox reactions. It was generally agreed that there is no sharp dividing line between redox and non-redox reactions, since all chemical reactions involve shifts in electron density to a greater or lesser extent. Many reactions accepted as redox reactions do not involve clear-cut electron transfer, but only partial shifts. It was pointed out that there is no completely satisfactory experimental criterion for defining redox reactions. Although the concept of oxidation number has obvious limitations, this appears to be ~~the~~ only reasonable basis yet available for defining redox reactions - i.e. redox reactions are those which involve changes in oxidation number. One member of the group raised the question whether Sanderson's "stability ratio" might provide a useful criterion, and promised to do some ~~more~~ calculations. It was agreed that the simple and admittedly arbitrary concepts usually presented to freshmen need to be supplemented later with a more complete discussion, including current information on the mechanisms of electron transfer reactions. The group discussed some of the recent work on mechanisms, including bridge atom transfer and electron tunneling.

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