TRAPPING OF REACTIVE SPECIES

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Identification of reactive intermediates is the key step towards understanding chemical reactions. Often, controversies exist about reaction mechanisms, about the nature of rate-determining transition states or about the role of intermediates. We are developing methods to identify the intermediates and to investigate their structure. We are using mass spectrometry which is a unique method among other analytical techniques in its sensitivity and thus in detection of low abundant species in an ionic form. We trap these ions and study their properties by infrared and visible photodissociation spectroscopy. This techniques allows us to investigate, for example, highly reactive metal complexes or elusive intermediates in organic reactions or short lived intermediates in photocatalytic reactions. I will show how we pieced together a puzzle in a photocatalytic reaction and I will discuss our attempts to break the oxo wall in inorganic chemistry.