

Visualizing Chemical Reactions in solution by Picosecond X-Ray Diffraction.

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Recommended with a Commentary by Steve Berry, University of Chicago

This work opens a whole new realm to experimental study, specifically the way atoms move, relative to one another, on the picosecond time scale during a chemical reaction. This includes the behavior of solvent species as well as the reactants. In particular, the authors were surprised to see that they could observe the separating iodine atoms from the dissociating diatomic iodine molecule actually impact on solvent molecules and heat them, causing local expansion. There is a lot of activity currently in fast X-ray studies; this has to be one of the most spectacular.