Time-resolved X-ray liquidography (TRXL) is a powerful tool for revealing the structural dynamics of chemical reactions in solution. By recording the difference scattering pattern at various time delays between ultrashort laser and X-ray pulses this technique allows to collect information on the structural change of the reacting molecules. This is shown by H. Ihee et al. on p. 3687, who elucidate the reaction mechanism of the photodissociation of I$_3^-$ in solution. In addition to the reaction dynamics of the solute species, the transient structure of the solute/solvent cage and the changes in solvent density and temperature are revealed.