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Ultrafast Electron Transfer Studied by Picosecond Pulse Radiolysis

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Furthering our knowledge on the reactivity of short-lived species in irradiated water at ultrafast timescales is necessary to understand the competitive reactions occurring within the first ps. The composition of aqueous solutions and the water/solid interface can potentially favour or inhibit one of these competitive ultrafast processes, such as electron hydration, electron hole recombination, proton transfer, or oxido-reduction of the solute. Pulse radiolysis measurements with 7 ps time resolution show that ultrafast electron processes occur in highly concentrated aqueous solution. The reactivity's of pre-solvated electron, pre-OH• radical and pre-H• atom radical are examined. By measuring the yield of the transient radical after the pulse it is shown that H₂O^{•+} radical undergoes an electron transfer and pre-solvated electron and pre- H• atom are very efficient reducing species.

Country/Organization invited to participate

France

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