# FEMTOSECOND STUDIES OF HUMAN THIOREDOXIN: DISSECTION OF COMPLEX DYNAMICS IN PROTEIN

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Protein dynamics are complex processes and separation of these intertwined dynamics has been a great challenge to experimentalists. By integrating femtosecond up-conversion technique and site-directed mutagenesis, we are able to dissect this complex dynamics into elementary processes. Here we report our first studies of the complex dynamics in human thioredoxin. We separated the change-transfer process between Trp and the disulfide-bond from the hydration dynamics on the protein surface, both of which were found to occur on the similar time scale of 20 picoseconds.