

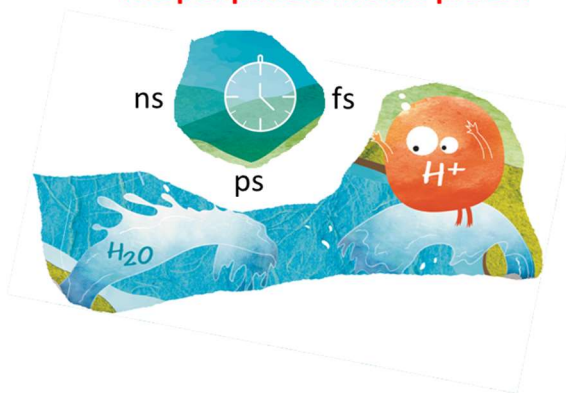
# Proton Transfer in Acid-Base Reactions in Aqueous Solutions: From Early Events to Macroscopic Proton Transport

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Acid-base reactions are among the most important chemical reactions in nature [1-6]. Fully comprehending proton transfer reactions involve understanding multitude of primary and fundamental chemical processes occurring over multi time-scales [2,4,6]. The processes include intramolecular rearrangements in the donor molecule [6], intra or intermolecular hydrogen-bonding dynamics preparing for the proton transfer within a reactive complex [7], proton transport through water which include the active participation of the solvent enabling the proton to span the distance between acid and base [2] and finally, proton recombination with the proton acceptor which mirror the proton dissociation process [2]. We describe multiple time-resolved experiments using electronic and IR spectroscopy which in combination outline the full spectrum of the chemical processes involved in proton transfer in acid-base reactions in aqueous solutions [1-7].

## The peripatetic mobile proton



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