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Principles and Dynamics of Proton Transfer in Proteins

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Proton transfer is broadly employed in protein functions, not only in energy transformation but also in biological signaling and enzymatic catalysis. Unlike electron transfer which has been well understood for nearly two decades, some key questions regarding the physical mechanism of proton transfer remains elusive after extensive studies. We will report a proof of concept study on principles and dynamics of proton transfer and its applications in proteins. In addition, we will discuss how to apply time-resolved infrared structural biology to probe and explore proton transfer during protein functions.