

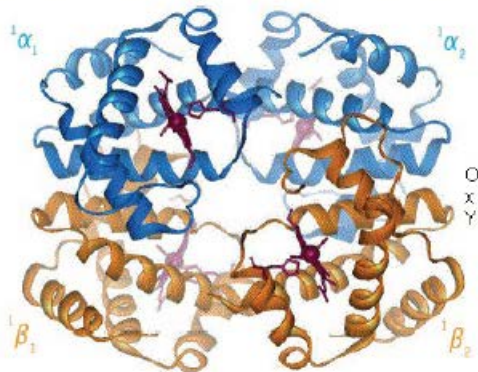
Time-Resolved Multiple-Probe Infrared Spectroscopy Studies of Carbon Monoxide Migration through Internal Cavities in Haemoglobin

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Human haemoglobin reactivity towards ligands such as O_2 and CO as well as ligand migration via the protein matrix is modulated by internal cavities. In the present work, a time-resolved multiple-probe picosecond to millisecond infrared technique developed at Ultra Facility was applied to determine the dynamics of the ligand migration via the internal cavities of haemoglobin. We studied both native haemoglobin (see figure) and its isolated α and β chains. We succeeded in following the evolution of photodissociated CO ligand inside the protein matrix during geminate recombination. Moreover, we managed to detect the photodissociated CO molecules escaped from the protein into external media.



The schematic structure of human haemoglobin in Oxy state with α and β subunits colour-coded.

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