FEMTOSECOND HYDRATION DYNAMICS OF APOMYOGLOBIN: NATIVE AND MOLTEN GLOBULE STATES

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Here we report our direct probing of the hydration dynamics at the different locations of apomyoglobin. The intrinsic amino acid, tryptophan, is used as a local optical probe while site-direct mutagenesis is employed to place trytophan into three different sites (W7, W14, and W12) in the A helix of apomyoglobin. We use the femtosecond-resolved up-conversion technique to follow the fluorescence Stokes shift of the excited tryptophan in real time. The preliminary results reveal that the hydration dynamics are ultrafast, in less than 100ps. In the future with this technique, we will be able to map out the global hydration dynamics on the protein surface.