Radiation Damage in Biomolecular Systems
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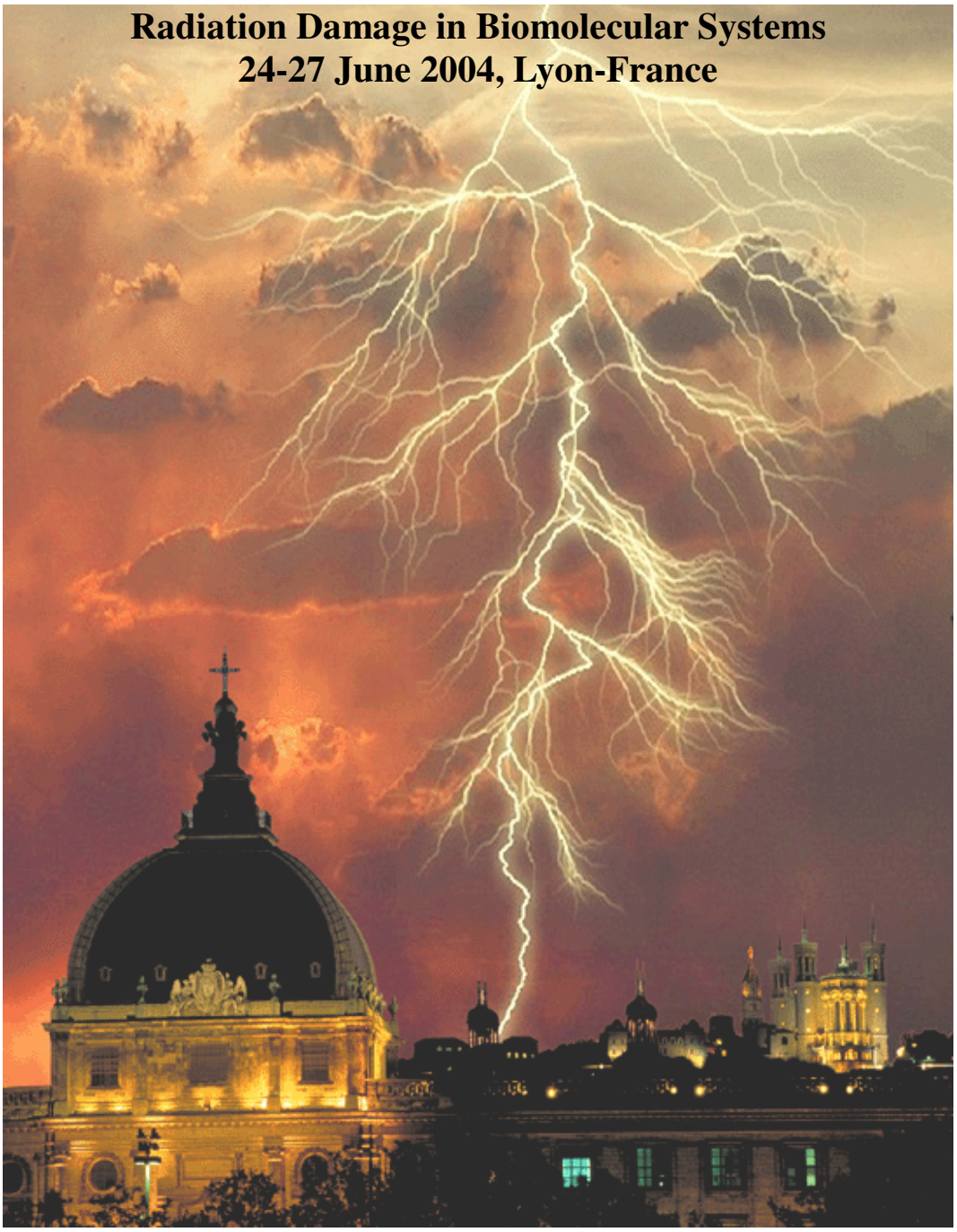

Electron Interaction with Small and "Little Larger" Molecules

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Electron spectroscopy combined with high resolution optical spectroscopy is a valuable tool for investigating atomic interactions with molecules in order to understand mechanisms of radiation damage in cells. We have been studying processes of elastic electron scattering, excitation and formation of resonances in molecules such as water, acetic acid, tetrahydrofuran, glycine and uracil. In the present experiments electron energy loss spectra has been recorded in crossed beam arrangement. Attention has been paid especially to the resonances as they are very efficient mechanism to transfer energy from low-energy electron to a molecule. Threshold electron spectrum of water molecule is dominated by resonance contributions to the excitation of valence and Rydberg triplet states. UV absorption spectra of acetic acid, glycine and uracil molecule have been recorded in order to make a comparison with electron loss spectra and to identify optically allowed and forbidden transitions. Elastic electron scattering has been investigated for tetrahydrofuran molecule that may be seen as an analogue to deoxyribose backbone of DNA.