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X-ray photoemission spectroscopy of radiosensitizers

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Radiosensitizers are used in radiotherapy to enhance tumour control of radioresistant hypoxic tumours. Recent studies indicate that the formation of radical anions is a key step. Thus understanding the ionization reactions of radiosensitizers is crucial in evaluating the radiosensitization potential and in developing new and more effective drugs. The present study concentrates on the electronic structures of several important radiosensitizers such as nimorazole, 1-methyl-5-nitroimidazole, and 4(5)-nitroimidazole using gas phase synchrotron source X-ray photoemission spectroscopy and quantum mechanics. Detailed analysis of valence and core level spectra will be provided and discussed in the light of possible tautomerism in these compounds.

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XPS, radiosensitizers, conformers, experiment and theory

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