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Photochemistry of Nitrous Acid and Nitrite Ion

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PHOTOCHEMISTRY OF NITROUS ACID AND NITRITE ION

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A study of the solution phase photochemistry of nitrous acid/nitrite ion system in both water and nonaqueous solvents has been undertaken. Photolysis at 365nm of the aqueous system is known to form hydroxyl radical and nitric oxide. The relative contributions of the molecular and ionic forms to the photochemical production of radicals is unknown. Scavenging reactions of the hydroxyl radicals in aqueous and nonaqueous solution are used to determine the relative production of OH· formed by photolysis of HONO and NO_2^-.

Molecular nitrous acid is isolated from its conjugate base by extraction into various solvents. Extraction of an aqueous mixture of nitrous acid and nitrite ion with benzene, selectively puts only HONO into the organic phase. The products of the photolysis of this benzene solution indicate hydroxyl radical formation. Nitrite ion dissolves in aprotic solvents, such as DMF and DMSO, without the formation of nitrous acid. The study of the photochemistry of such solutions is currently in progress.