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An Examination of the Photochemistry of Nitrous Acid

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AN EXAMINATION OF THE PHOTOCHEMISTRY OF NITROUS ACID

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With our increased use of fossil fuels, there has been a major increase in emissions of atmospheric pollutants. Featured among these are oxides of nitrogen (NOx) formed primarily by internal combustion engines (automobiles). NOx reacts in the environment to form various compounds, including nitrous acid, HONO. Nitrous acid is photolyzed by UV light from the sun, forming radicals that can react with a myriad of volatile organic compounds in the atmosphere, especially unsaturated hydrocarbons. This investigation has two objectives: (1) a study of the thermal stability of aqueous nitrous acid, monitored by UV Vis spectroscopy and pH; and (2) a study of ethylene (H2C=CH2, a simple model for unsaturated compounds) as a radical scavenger used during the photolysis of aqueous nitrous acid.