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SRef-ID:

The reactions IO + NO_3 → OIO + NO_2, and I + NO_3 → IO + NO_2, - rate coefficients and product yields by LIF detection of IO

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The technique of pulsed laser photolysis coupled to LIF detection of IO was used to study the reactions (R1a) IO + NO_3 → OIO + NO_2 and (R2) I + NO_3 → (products) at ambient temperature. The reaction (R1) was observed for the 1^{st} time in the laboratory, and a lower-limit for the rate coefficient of $k_{1a} > 7\times10^{-12}$ cm^3 $molecule^{-1}$ s^{-1} is reported, which may explain anomalous ratios of OIO:IO observed in the night-time marine boundary layer. Other important results included the identification of IO (*via* laser excitation spectra around λ = 445 nm) as the product of (R2) at approximately unity yield, and k_2 = (1.0 $\pm$ 0.4)$\times10^{-10}$ cm^3 $molecule^{-1}$ s^{-1}. The implications of these results for the night-time chemistry of the marine boundary layer are discussed.