

DETERMINATION OF FORMIC ACID YIELDS FROM THE REACTION OF THE SIMPLEST CRIEGEE INTERMEDIATE WITH FORMALDEHYDE

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Formic acid, one of the most abundant acids in the Earth's atmosphere, plays an important role in atmospheric acidity. Here, we report the direct observation of formic acid generated by the reaction of the simplest Criegee intermediate ( $\text{CH}_2\text{OO}$ ) with formaldehyde (HCHO). By employing mid-infrared comb lasers and synchronized two-color time-resolved dual-comb spectroscopy, we investigated the kinetics of the reaction  $\text{CH}_2\text{OO} + \text{HCHO}$  as well as the yields of the reaction products  $\text{HCOOH} + \text{HCHO}$  and  $\text{CO} + \text{H}_2\text{O} + \text{HCHO}$ . The potential implications of the reaction  $\text{CH}_2\text{OO} + \text{HCHO}$  in the atmospheric chemistry are also discussed in this work.