OH from reactions of HO_2 with organic peroxy radicals (RO_2)

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The OH yield (α) of the reactions of HO_2 with twelve different RO_2 has been determined experimentally using Pulsed Laser Photolysis (PLP) combined with Laser Induced Fluorescence (LIF) and Transient Absorption Spectroscopy (TAS). Direct measurement of the main species OH, HO_2, RO_2 and O_3 enabled extraction of α via numerical simulation of their time dependent concentration profiles.

$HO_2 + RO_2$	--->	$HO + RO + O_2$	R1a
		$ROH + O_3$	R1b
		$RO_2H + O_2$	R1c

A wide range of RO_2 was investigated, including ones with oxo-, hydroxy-, fluoro- and aromatic substituents. We found the highest values of α (larger than 70%) for RO_2 bearing a carbonyl group close to the peroxy entity.