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A chemical probe technique for the determination of reactive halogen species in aqueous solution: Part 2 – chloride solutions and mixed bromide/chloride solutions

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Abstract. Although reactive halogen species ($X^*=X^\bullet$, $^\bullet X_2^-$, X_2 and HOX, where X=Br, Cl, or I) are important environmental oxidants, relatively little is known about their kinetics in condensed phases such as seawater and sea-salt particles. Here we describe a new technique to determine reactive chlorine and bromine species in aqueous solutions by using allyl alcohol ($CH_2=CHCH_2OH$) as a chemical probe. This probe is combined with competition kinetics in order to determine steady state concentrations of X*(aq). In some cases the technique also can be used to determine the rates of formation and lifetimes of X* in aqueous solution. In a companion paper we reported the results of our method development for aqueous solutions containing only bromide (Br^-). In this paper, we discuss method development for solutions containing chloride (Cl^-) alone, and for solutions containing both bromide and chloride.

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