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Letter to the Editor

Comments on paper 'Kinetics and mechanism of the oxidative color removal from Durazol Blue 8 G with hydrogen peroxide' by HA El-Daly, A-FM Habib, MAB El-Din [Dyes and Pigments 57 (2003) 197–210]

I would like to bring to the readers' attention that an alternative, potentially more appropriate, interpretation can be put forward for the mechanism of oxidation of the reaction given in this paper. This derives from an earlier publication, which is not cited by the authors '**Kinetic investigations into the copper (ii) catalysed peroxosulphate oxidation of calmagite dye in alkaline media**' (*J Chem Soc Dalton Trans 1997 3811–3817*), by J. Oakes, G. Welch, P. Gratton.

Although the oxidant was peroxosulphate and a different dye was used, the mechanistic elements are similar:

$$\text{CuDye} + \text{oxidant} \overset{\text{SLOW}}{\rightarrow} \text{products} + \text{'free'}$$
$$\text{Cu species (catalyst)}$$

$$\text{CuDye} + \text{oxidant} \overset{\text{CATALYST}}{\rightarrow} \text{dye oxidation}$$

In this scheme, the initial reaction between oxidant and CuDye is slow but the Cu species generated promotes a rapid autocatalysis reaction. The reaction scheme has been described in detail in our paper.

The oxidation process for Durazol Blue 8 G has many features in common with oxidation of Cu-bound Calmagite, e.g. autocatalysis, zero order kinetics in [CuDye], maxima in rate with pH and dependence on scavengers. Furthermore, whilst the pH dependence can be explained by Cu speciation, the explanation given for the oxidation of Durazol 8 G—repulsion of perhydroxyl and sulphonate groups of the phthalocyanin dye—cannot explain the maximum in rate.

A further point, investigations were done in the absence of effective metal ion sequestering agent, e.g. EDTMP. As the perhydroxyl anion is relatively inactive under the conditions studied, it is likely that the initial reaction is also metal catalysed. However, indigenous catalysts are generally not as effective as freshly prepared catalysts generation in situ.

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