

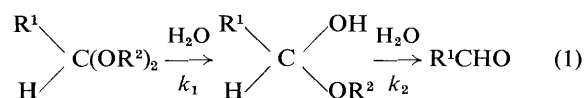
## Rapid Hemiacetal Formation from a Simple, Open-chain Monothioacetal during Soft Metal Ion-promoted Hydrolysis

David Penn and Derek P. N. Satchell

Chemistry Department, King's College, Strand, London WC2R 2LS, U.K.

The  $\text{Hg}^{2+}$ - and  $\text{Tl}^{3+}$ -promoted hydrolyses of the monothioacetal  $\alpha$ -ethoxy- $\alpha$ -ethylthiotoluene (**1**) proceed *via* the relatively very rapid formation of the hemiacetal (**2**) whose subsequent hydrolysis controls the observed rate of aldehyde formation.

Acetal hydrolysis proceeds *via* the hemiacetal (equation 1) and, under Brønsted acid or base catalysis, normally<sup>1,2</sup>  $k_2 \gtrsim k_1$ .



Only for certain small, cyclic, or otherwise strained acetals at acid pH has it been found that  $k_1 > k_2$  and here the ratio  $k_1/k_2$  has not been very great. The few studies<sup>3,4</sup> which concern metal ion-promoted hydrolysis are also compatible with  $k_2 > k_1$ .

Compounds which are not acetals can be prepared which, with appropriate catalysis, hydrolyse relatively very rapidly

