

# **The Development of Foxing Stains on Samples of Book Paper after Accelerated Ageing**

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*The term foxing is used to describe red-brown spots that develop on some paper objects over time. Recent research provides some evidence that foxing results from localized accelerated oxidation of cellulose. In this project, foxed book paper was exposed to accelerated ageing conditions to study potential changes to the foxing stains with ageing. The appearance of the selected stains was described in normal and UV light before, during and after ageing. The UV fluorescence of the stains was also monitored using a fluorescence spectrometer. Accelerated ageing caused the foxing stains to increase in discoloration in normal light and also changed their appearance in UV light. The UV fluorescence of the foxing stains decreased with ageing. Decreased fluorescence was accompanied with a shift of the peak maximum to a longer wavelength, indicating that chemical changes to the stained paper are occurring with accelerated ageing. Observation of stain development, correlated with changes in UV fluorescence, support the foxing formation theory that areas with strong UV fluorescence are precursors to discoloured foxing stains, which exhibit weaker fluorescence. The results of this experiment are considered preliminary since paper from only one book was studied.*