

## PHOTOYELLOWING OF STILBENE-BASED FLUORESCENT WHITENING AGENTS

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Wool and wool fabrics have a propensity to yellow under exposure to the ultraviolet component of sunlight. This effect is accelerated when the wool is wet, such as when a wool garment is washed and hung out to dry. The application of fluorescent whitening agents (FWAs), which absorb UVA radiation and re-emit blue or violet light as fluorescence, produce an initially whiter garment, but also significantly exacerbate the yellowing process. In order to develop effective treatments against wool photoyellowing, it is imperative to first understand the photoyellowing process. In particular, the role and relative contribution of FWA photoproducts to chromophore formation and accelerated photoyellowing has led to considerable debate. In this study we were successfully able to utilise mass spectrometric techniques to both characterise and relatively quantify photoproducts formed in the irradiation of aqueous solutions of the stilbene-based FWA 4,4'-bis(2-sulfostyryl)biphenyl, including yellow photoproducts formed when the irradiation was performed in an oxidising solution. In addition, photopathways leading to chromophore formation were elucidated, offering insight into potential photoprotection strategies for wool apparel

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