Synopsis of Original Research Paper

Developments of UV Cutting Materials and the Utilization for Cosmetics (Hair Colors or UV Cutting Articles)

Hironori Oda

Faculty of Education, Osaka Kyoiku University

While the contribution of singlet oxygen quenchers to synthetic colors has been studied previously by several workers, there have been few studies pertaining to the use of singlet oxygen quenchers as a means of improving the light fastness of cosmetic colors (e.g. hair colors). Nickel complexes of arylsulfonic acids were preliminary prepared, and the protecting effect of these compounds towards the photochemical stability of natural and synthetic colors was examined in polymer substrate. It was proposed that nickel salts of benzenesulfonic acid and its derivatives can be applied as effective stabilizers against the photofading of synthetic or natural colors.

In this paper, the photofading behaviors of some colors were investigated in polymer substrate. The contribution of singlet oxygen to those fading was suggested. Various phenyl ester type UV absorbers were prepared, and the protecting effect of these compounds towards the photofading of colors was in cellulose acetate film. The application of simple UV absorbing compounds is not necessarily useful for improving the light fastness of colors. However, phenyl ester UV absorbers bearing a singlet oxygen quencher, nickel sulfonate group, almost perfectly suppress the photofading rate of these colors. It was proposed that nickel complexes of 4-benzoyloxybenzenesulfonic acid and its derivatives can be applied as effective stabilizers against the fading of colors.

Antibacterial activity against Staphylococcus aureus and Eschrichia coli of six phenyl ester type UV absorbers containing nickel sulfonate group was investigated a mean of JIS test method (JIS L 1992). The antibacterial activity was not observed about six compounds. It was suggested that these nickel compounds were environmental safety chemical compounds.