Feczkó, T., Samu, K., Wenzel, K., Neral, B., Voncina,B. Textiles screen-printed with photochromic ethyl cellulose-spirooxazine composite nanoparticles. *Color. Technol*. **129** (2013) 1–6.

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Summary

Photochromic compounds change colour due to exposure to light while the reversion may be due either to radiation or may be thermal. The use of photochromism on fabrics can provide new opportunities to develop smart textiles, e.g. sensors and active protective clothes. Ethyl cellulose-1,3-Dihydro-1,3,3,4,5 (and 1,3,3,5,6)-pentamethyl-spiro-[2H-indole-2,3'-[3H]naphtha[2,1-b][1,4]oxazine] composites were prepared by an oil-in-water emulsion, solvent evaporation method in order to form easily suspendable and fatigue resistant photochromic nanoparticles in screen printing paste. Their size was well below 1 μm and did not change substantially in a wide range of dye concentration. After screen printing a homogenous photochromic layer was built on a cotton substrate surface, which represented substantial blue colour development in CIELAB colour space measurements due to UV light even at a dye concentration of 0.045 % *w/w*. The addition of a photodegradation inhibitor, Tinuvin 144 further increased the colouration of the printed fabric.