

Gold as a colourant for high value textiles



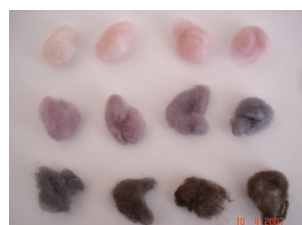
Colloids of gold nanoparticles of different particle sizes and colours

A unique and durable technology for the fabric industry

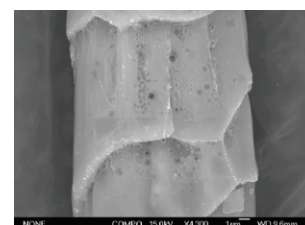
Gold and fine merino wool are premier materials. Now a unique technology has combined these materials to startling effect. It is well known that when the particle size of gold is reduced to nanosize dimensions of up to a few tens of nanometres, it exhibits surface plasmon resonance effects which give rise to a variety of intense colours depending on the size and shape of the nanoparticles. Gold nanoparticles about 10 nm in size are red. As the particle size increases to about 50-70 nm, the colour progressively shifts through the visible spectrum to violet, thereby providing a range of colours.

We have captured the exciting opportunity to develop a proprietary nanoscience and nanotechnology concerned with the preparation and novel use of gold nanoparticles as stable colourants on fabrics and textiles, particularly merino wool for high quality fashion garments and other applications. Gold nanoparticle colourants have the advantage that they cannot fade or denature in light, as traditional organic dyes can.

Our proprietary nanoscience and nanotechnology is concerned with the preparation and incorporation of gold nanoparticles of different sizes and hence different colours, into wool and other natural and synthetic fibres and substrates, by the controlled reduction of the Au^{3+} ion to metallic Au^0 nanoparticles onto and within the fibre or substrate.



Raw merino wool coloured with gold nanoparticles



Scanning electron microscope image of a merino wool fibre with gold nanoparticles (small white dots) on the surface. The nanoparticles are concentrated at the cuticle edges



Cotton fabric (above) and cotton and merino wool yarn (below) coloured with gold nanoparticles

The resulting products contain only the pure fibre and pure gold, thereby linking the inherent high prestige of gold with quality and high value fashion.

This opens up new opportunities for the high value textiles, fashion and other markets.

We have also demonstrated its applicability to other natural fibres (cotton and silk) and synthetic polymer substrates.

Expressions of commercial interest should be directed to:



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