

Are we missing out on something?

The use of Celliant technology in sports apparel has grown of late and is now beginning a move into sports shoes in the form of linings and insoles. It is by no means a new product but has struggled to gain acceptance by many without some hard medical evidence as to the benefits claimed for it. Some positive test results from various independent medical bodies over the last two or three years would appear to have begun to break the log jam. Some people, however, still have a problem understanding how the technology works as it appears, on the face of it, to be more magic than logic and it's always hard to accept something you do not understand.

Celliant technology is based on years of research regarding the effect certain wavelengths of light have on the body. Past clinical studies have demonstrated that light appears to reduce pain, speed healing, increase energy and improve wellness in the human body. Put in simple terms, Celliant is a polymer fibre that contains optically active micro-particles comprising a patented mix of silica, titanium dioxide and silicon carbide. This mineral blend harnesses and recycles infrared light emitted by the human body.

THE MECHANISM

At a temperature of absolute zero (-273°C), all atoms in a solid object are motionless and no energy is generated. In the presence of energy in the form of light or heat given off by the human body, for instance, these atoms become 'excited' and release photons in the form of energy spread across the entire electromagnetic (light) spectrum. The distance between the vibrations of individual light photons emitted corresponds to their wavelength and hence their light energy; the same light energy that has been shown can reduce pain and

improve wellness in the human body.

Humans are homeotherms which are able to keep their bodies at a constant temperature and, in our case, this means our core body temperature occupies a narrow range either side of 37°C. As a function of our metabolism, our bodies therefore constantly produce heat and light energy. This light energy spontaneously converts into wavelengths across the entire electromagnetic spectrum, including IR (infrared light), which has a wavelength that is longer than visible red light and is invisible to the human eye.

Using this constant source of light energy, Celliant fabrics or linings have been shown to increase oxygen levels in the skin, underlying tissue and muscle, without any need for exposure to natural light in order to gain their source of IR light. This process occurs as effectively in a dark room as in one that is lit. If exposed to daylight, light energy from the sun merely acts as an additional source of IR.

A Celliant lining in a shoe could therefore prove beneficial in improving tissue oxygenation and circulation while running or walking. Furthermore,



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TERMINOLOGY

Photon – an elementary particle which is the quantum of light and all other forms of electromagnetic radiation.

Quantum – the minimum amount of any physical entity involved in any action between two objects that causes an effect upon them.

Homeotherm – having the ability to maintain a stable core body temperature regardless of external conditions.

when running in particular, heel strike is load bearing and has been associated with changes in tissue cells that cause local inflammation in the foot and elsewhere. Increasing blood flow during and post-exercise has been shown to reduce both inflammation and soreness in the feet after prolonged exercise. Those of us who have spent many years tramping round trade shows have all too often dreamt of just such a way to ease our aching feet.

A clinical study, carried out by research scientists affiliated to the University of California-Irvine Healthcare Center, found that the material also has pain reducing capabilities. In a double blind study using US government approved measuring techniques for trials of pain relief medications, the degree of pain relief reported by participants using products enhanced with Celliant was significantly greater than that reported by those using placebo products.

HOW TO APPLY IT TO FOOTWEAR?

It would appear, therefore, that apparel containing Celliant fibres is not only good for athletes but, potentially, would benefit the rest of us as well. But, how do you apply it to

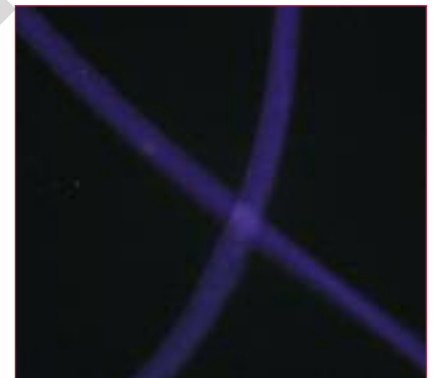
footwear? Well, it is already partially there in the form of socks.

Celliant can be combined with a great variety of other fibres including cotton, wool, polyester, nylon and proprietary products such as Lycra. The only proviso that Celliant parent company Hologenix makes is that it should comprise at least 42% of the finished material in order for the user to experience the benefits. The company says that Facebook testimonials report first time users as saying that their feet and lower legs 'feel better' during and after exercise when wearing Celliant socks. Now, socks are worn in shoes and, if they work, then logically linings do, too, as Celliant does not have to be in direct contact with the skin in order to be effective.

It is actually made into filament and spun yarns which allows it to be incorporated into both circular and warp knitted fabrics. The fact that these in turn can be produced using blends that contain hard wearing fibres such as polyester and nylon should avoid any problems of abrasion or poor wear. In addition, breathability and moisture dispersion should also be good. As the light emitting minerals are contained within the Celliant fibres and are not merely a coating, they

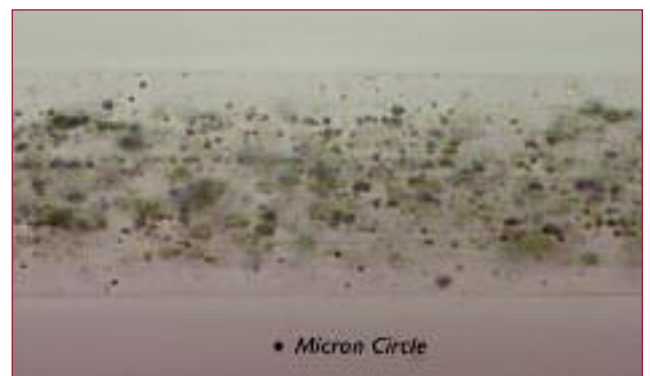
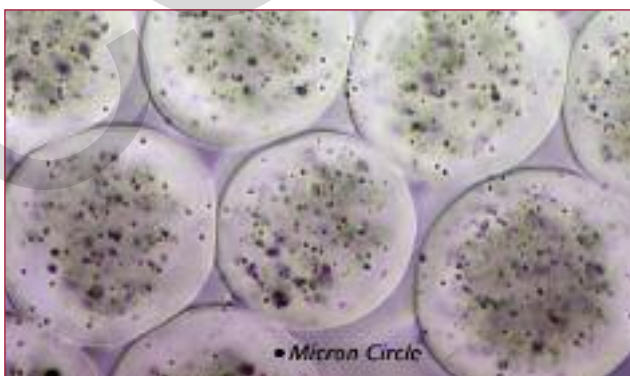


Celliant fibres as observed in transmitted (visible) light



Under broadband ultra violet rays, the same fibres become fluorescent

cannot leach or wash out and will, therefore, remain effective for the life of the shoe. So, are we missing out on something? 🧐



At 2,000x magnification the optically responsive particles in the Celliant fibre are easily seen. The left hand image is a cross section while the right hand one is longitudinal.