Editorial – Protective textiles

Focused issue; protective textiles

Protection against the cold was one of the basic needs of humanity many millennia ago that contributed to our evolution, development and prosperity. Modern humans started wearing clothes earlier than the last ice age; 120,000 years ago, after migrating to higher latitudes where the climate was colder (https://news.ufl.edu/arch, 2011). The materials used were leather, fur and leaves tied or wrapped around the body, and later around 6500 BC, they started producing felts from looms.

Protection was not only for survival against the elements, because around 5000 BC Egyptians produced bandage-like linen for mummification made by flax spun into yarn. Society norms such as status already started at that time also with garments being made to dress up the pharaohs (https://blog.patra.com/20, 2014) (https://www.historyofclot, 2021).

So although textiles were developed for protection and modesty in the long past, nowadays, the purpose of wearing and using textiles is changed for socio-economic, cultural and psychological reasons. For this reason, we make distinctions between textiles, and hence, we group and categorise products and processes. The biggest distinction is in conventional textiles and apparel and in technical textiles and apparel. In the latter category, we have protective textiles that have shifted to higher performance than conventional textiles and of wider end user applications. Those end-uses are normally against hazardous environments, such as fire, chemical, biological, radiation and medical applications, but not exclusively. New technologies in fibres, yarns and fabric processing enable the development of new protective textiles which are multi-functional and have SMART attributes.

Protective textiles are particularly important for improving standard of living by protecting and enabling quality of life. And there has been a lot of progress over the last 30 years towards developing higher performance textiles. Can you imagine space travel without zero-G suits, deep diving without diving suits and resisting COVID-19 without protective masks and gowns? So the selection of the eleven original papers in this focussed study is another milestone towards recognising the achievements and challenges of this area.

This publication starts with the dynamics of air permeability and water absorption by Daiva Mikucioniene *et al.*, followed by a paper by Yun Su *et al.* on a study of heat and moisture transfer of protective clothing and a paper on mosquito repellent performance using bamboo-polyester yarns for seamless knitting by Zimin Jin. A study on shoulder protection of workers by Yejin Lee *et al.* follows, and attention is then given on anti-bacterial printing of cellulose fabrics by Zulfigar Raza *et al.* and on actively heated multi-layered clothing by an embedded heating device by Lee Heeran *et al.* Spacer fabrics for low-velocity impact by Wiah Wardiningsih *et al.* is next, followed by a study on the electrophysiological assessment of cushions by Yejin Lee and co-workers and a study of the thermal resistance of sleeping bags by Guangbiao Xu *et al.* The wear fit and comfort of face masks by Mika Morishima *et al.* is next, and last but not least, the paper on the bursting strength of parachutes by Vijay Raj *et al.* Reading of this issue will access new technical knowledge of all these topics and will find out about the challenges that we still have for making textiles with better and new protection requirements.

The effort of all those authors and their reviewers for producing those papers is very much appreciated, and their achievements are celebrated in this "protective textiles" focussed issue of the *International Journal of Clothing Science and Technology*.

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