for antibiotic action. It is indeed a molecular feast for those who can dissect and visualize on a computer screen, regions of the ribosome structure involved in many different acts. Yonath, who pioneered through decades of perseverance in obtaining X-ray diffraction pattern from crystals, narrates structure–function details as revealed from crystal structures of ribosomal subunits.

It has been an education for me to read the articles in this volume. In my opinion it contains some new information of interest to all those engaged in biophysical research. It is therefore to be read by researchers at all levels and should find place in a library catering to researchers in life sciences.

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Smart Fibres, Fabrics and Clothing. Xiaoming Tao (ed.). The Textile Institute, CRC Press, Woodhead Publishing Limited, Cambridge. 2001. 316 pp.

'*Smart' is the art to attract attention in the mart of material world* and this buzzword has pervaded almost all space of our society. Therefore, smart textile cannot be an unusual term and naturally a book on the subject matter is quite expected in modern times. This title intends to mean mainly functionally active textile and allied items. Textile seems to be a remote item in the realm of smart system, yet the concept is applied nicely in most of the chapters.

The human body is an auto-controlled, thermo-regulated organism which regulates body temperature, but body cannot always sustain if there are sudden temperature changes to the extremes. To cope with this situation, newer concepts of smart clothing based on heat-storage and thermo-regulated textiles are being explored worldwide to keep the user warm when it is cool and vice versa to ensure comfort temperature. Such clothing items are nothing but a form of functionally graded material (FGM) based on 'intelligent textile' which has been discussed in this book.

Generally, the technical meaning of the term smart items is quite broad and includes thermal, electronic, optical or even many bio-related systems which this book has covered to different degrees. In the introductory part of the book, smart materials were categorized as passive smart, active smart, very smart and intelligent material in accord with their mode and level of function. In fact, the first five and the last two chapters are particularly worth reading for easy understanding of the scientific aspects of the constituent items and their functional roles.

A considerable portion of the book is engaged on the thermal events involving phase change materials (PCM) which absorb, store or release heat according to the change of temperature during phase change process and is most frequently used in the manufacture of smart textiles. For the purpose of designing smart clothing, the approach of PCM in conjunction with other energy transfer technologies to convert NIR rays of the sun into heat is quite innovative indeed. The technique of fabrication of smart fibre by filling PCM into the fibre of different shapes-round, square and triangular is really unique and the brief information on thermochromic textiles, thermal anisotropy and its implications on the effects of fibre orientation within the web are especially interesting. However, it is understood that most smart fabrics are still being upgraded to make them more resistant to laundering.

A chapter on thermally sensitive textile materials provided more information than description on the necessity and technicalities of 'extreme cold-weather protective clothing' (ECPC) based on breathable membranes in conjunction with reflective materials. This is particularly important as personnel posted at Antarctica of high altitude area badly need ECPC to combat harsh weather conditions where wind velocity may reach 150 miles per h and temperature falls to – 46°C, in which case layered clothing system can continually adjust to conserve and manage body heat. The harshness of wind chill on the human body is assessed from the 'wind chill factor' which is well presented by mathematical equations involving wind velocity and temperature. The technology of breathable fabric with adequate flexibility is quite unique, in the sense that it is waterproof and at the same time it avoids the condensation of perspiration in a garment during wear. Therefore, inclusion of a chapter on membranology with special emphasis on the material aspects for gas separation is appreciable.

In systems involving optoelectronics, changes in refractive index induced by radiation led to the development of fibre bragg grating (FBG)-based sensors for smart structure. Besides mechanism and fabrication of FBG optical fibre, discussions on the optical responses of FBG under different modes of deformation were made in consecutive three chapters (8, 9 and 10). FBG sensors have achieved significant applications for monitoring the mechanical or temperature response in smart textile composite system.

The other area of smart system discussed involves bio-related events where medical textiles for healing and construction of human tissue are particularly important in view of their growing market. Tissue engineering to regenerate or grow new tissues and organs on porous biodegradable scaffolds or templates based on polymeric textile material is very useful. A list of synthetic non-living type biomaterials as implantable textiles can be known from the text. Interestingly, biodegradable shape memory polymers as promising implant material in the medical field have also been discussed adequately. It also reported certain interesting aspects of the gels under the influence of pH, light and/or heat to response is extremely fast which may be intended for use as photo-responsive artificial muscles, switches and memory devices for future applications. Few chapters report some research work on interpenetrating polymer network and graft copolymer to prepare representative stimuli responsive gel systems. Some extremely interesting information on materials showing crawling movement under the influence of external force to mimic the situation of living cell amoeba will help understand the interface of living and non-living objects. This demonstration provides scope for development of actuator, artificial muscle or micro-, nano-machine of the future generation.

The book is no doubt excellent for conceptual understanding of the overall subject but it is unnecessarily burdened with some trivial topics as well. In fact, some less important items of discussion on passive system diverted the attention from the main theme to be restricted to the active smart system as vowed in the foreword. Moreover, in some of the chapters (12, 15) the term smart sounds like a slogan. Contents of chapters 12–15 on textiles are more like a technical seam rather than having a scientific sheen.

It is understood that a new era of sensate surroundings is emerging in which nothing is expected to remain incommunicado including textile clothing. Naturally, continuous emergence and convergence of smart technologies into textile items will further influence our life. In this perspective, various interesting information referred in the text containing a total of 782 references distributed over its 17 chapters will be useful to a wide section of professionals.

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PERSONAL NEWS

Edward Teller (1908–2003)

Edward Teller died on Tuesday, 9 September 2003 at the age of 95. 'Edward Teller made his mark on our times in a way that few could equal. Although many of his colleagues found him abrasive and contentious, his old friend, the Nobel Prize-winner Eugene Wigner called him "one of the most thoughtful statesmen of science" '. Teller died in his home, located on the Stanford University campus. He had suffered a stroke a few days ago.

My mind goes back to sometime in summer/fall of 1960, when I accompanied Brockhouse from Chalk River to National Research Council, Ottawa to listen to a lecture by Teller. That day happens to be a special day for me because on my return to Chalk River by night, I was informed that I was expected to meet Homi Bhabha, Chairman of Indian Atomic Energy Commission at the Challet along with other Indian trainees. I was ushered in Bhabha's august presence alone since all the other Indians had already met him and had left. He was relaxing along with the top brass of AECL. As soon as I introduced myself as a physics trainee working with Brockhouse, he asked me as to who was Brockhouse. I had to do some explaining. Then he asked me as to why I was so late. I told him that I had been to Ottawa to listen to Teller. His next question bowled me over 'what is that he talked about which we don't know already?' It took me a couple of minutes to recover and give a brief gist of what I had heard that afternoon.

There are remarkable similarities in the lives and achievements of these two famous physicists, namely Homi Jehangir Bhabha and Edward Teller. Both gave up engineering as they were drawn to theoretical physics and made unique contributions to quantum physics to begin with. Both were involved later with nuclear energy and its development.

'Bhabha, born in Bombay on 30 October 1909, son of a barrister, grew up in an aristocratic environment. After passing the Senior Cambridge Examination, he joined the Gonvile and Caius College in Cambridge with an intention to pursue mechanical engineering. His mathematics tutor was Paul Dirac, and Bhabha became fascinated with mathematics and theoretical physics. After obtaining his honor's degree in 1930, he carried out research at the Cavendish Laboratories at Cambridge. He received his Ph D in 1935 and remained in Cambridge until 1939. During his tour of Europe he met Bohr, Pauli, Fermi among others.' Bhabha founded the Tata Institute of Fundamental Research (TIFR) in 1945 and he was its first Director. Although the Atomic Energy Establishment, Trombay (AEET) was formally inaugurated by Jawaharlal Nehru on 20 January 1957, the Atomic Energy Commission had been set-up in August 1948 and the scientists working on programmes of direct relevance to applications of nuclear power were transferred from TIFR along with their research programmes to Trombay and became part of AEET. Bhabha headed AEET.

Teller, son of an attorney, was born in January 1908, into an affluent, educated Jewish family in Budapest, Hungary. Young Teller was a mathematical prodigy, educated in private schools. In 1926, he left Budapest to study chemical engineering in Karlsruhe, Germany. He moved to the University of Munich in 1928 to pursue his interest in physics. Later he shifted to the University of Leipzig to study under Werner Heisenberg and received a doctorate in physics in 1930. Teller immigrated to Denmark in 1934, where he joined the Institute for Theoretical Physics to work with Niels Bohr. Later Teller went to England and worked briefly at the University of London, before he immigrated to the United States in 1935. He had occasion to work with Fermi later. Edward Teller, with E. O. Lawrence, was one of the important persons who helped the founding in September 1952 of the Lawrence Livermore National Laboratory (LLNL), a US Department of

Edward Teller. The father of the hydrogen bomb.