
Editorial

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Biographical notes: David J. Whitehouse is Emeritus Professor of Engineering Science at the School of Engineering, University of Warwick, UK and Metrology Consultant to Taylor Hobson (Ametek) Leicester Ltd., UK. He has published over 250 technical papers, 23 patents and six books including the Handbooks on Surface Metrology and Surface and Nanometrology. He has been cited by ASPE as the 'Father of digital metrology' and he founded the first journal in the world on nanotechnology, namely 'Nanotechnology' which now has an impact factor of 4. He was Chief Research Engineer at Taylor Hobson before becoming Chief Scientist at the School of Engineering at the University of Warwick.

Everything is changing concerning surfaces and their measurement; from the surface itself to its metrology, and from the manufacture of the surface to its use. In recent years the surface has taken on a more important role. This has been partly due to the advent of miniaturisation but also for the need to cut costs and to improve performance. This and the next issue of the Journal seek to demonstrate these effects by means of a few papers by some of the world's chief exponents of the subject. The coverage is not complete but it is hoped that the messages in the publications and the references in them will be sufficient to give a background from which further investigation will be possible.

What is noticeable is that changes have been profound, not least being the role of the surface itself: shape, form, profile and texture. Engineering terms are now being more involved with the physical properties associated with area and line boundaries. For the first time, form and texture have taken on a role independent of the size of the component. This shift from the traditional is due to new manufacturing methods and the realisation that adding value to the product is best achieved by means of optimising surface properties and effects.

The metrology is also changing by the increasing use of mathematics to enhance instrument performance, to help surface data processing and also to control the instrument measurement cycle. All this has been made possible with the introduction of digital methods. On the downside, simulation has overwhelmed the practical verification of parameters and experimental experience is at a premium. Instrumentation has shifted away from contacting, profile measurement towards aerial (3D) non-contacting

techniques but there are still cases where contacting methods are best. Comprehensive measurement near to manufacture is easing the pressure on inspection rooms and shorter measurement times rather than extra fidelity is the driving force.

This issue contains a general paper setting out the fundamentals behind the changes. Papers on free form and structured surfaces follow as well as one on defects. Surface characterisation and the application of wavelets are also included. These represent a typical sample of the activity in surface metrology today. I have been lucky to have been involved in surface metrology from its faltering inception in the early 1960s right through to the confident advances being made today. My thanks to Professor Venkatesh and the authors for giving me the opportunity to reveal, in this issue and the next, some of the key changes which are taking place in this fascinating and important subject.