

Nanotechnologies

It is a great honour for ISO/TC 229 that nanotechnologies has been deemed worthy of a complete issue of *ISO Focus* so early in its existence. This reflects the global interest in nanotechnologies and the high expectations that governments and business have in the emerging techniques, processes and materials, with applications in virtually all areas of human endeavour.

In this issue we have tried to provide an overview of the promises, challenges, and concerns associated with nanotechnologies. Contributors have identified where they feel International Standards can contribute at three levels – to assist the innovation process, to address the challenges in measurement at the nanoscale, and how they can help to alleviate concerns over potential health and environmental impacts with validated test methods and protocols to determine actual impacts.

Currently the work of ISO/TC 229 is divided into three work areas: terminology and nomenclature (WG 1), measurement and characterization (WG 2) and health, safety and environmental impacts of nanotechnologies (WG 3), convened respectively by Canada, Japan and the USA.

The first meeting of the committee was held in London in November 2005 and since then there have been two further plenary meetings – in Tokyo last June and Seoul in December.

The current work reflects the need for a common terminology, particularly for nanoparticles, identified by a number of studies, and the need for guidance on handling and testing of engineered nanoparticles in an occupational setting, whilst the new work item proposals awaiting approval focus on the areas of carbon nanotube purity, and the toxicology of nanoparticle silver.

Given the diversity of nanotechnologies, it is clear that standardization will require collaboration between different disciplines. Indeed, some committees like TC 24, TC 146 and TC 201, have already published standards relevant to nanoscale technology and management.

However, it is not just ISO TCs that have a stake in nanotechnologies standardization. The International Electrotechnical

Commission (IEC) has a number of committees that will be impacted by advances in nanotechnologies and has recently established its own TC (TC 113) to address specific electrotechnical aspects of nanotechnology not covered by existing TCs.

In view of overlapping interests between ISO/TC 229 and IEC/TC 113, it is proposed that two Joint Working Groups – terminology and nomenclature and measurement and characterization – be established to facilitate joint development of standards of common interest.

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In addition to liaising with a large number of existing TCs, a number of other organizations also have an interest in standards development, including pre-normative research.

One such area, that of potential health and environmental impacts of nanotechnologies, is of particular concern to the OECD's Chemicals Committee, which, in September 2006, established a Working Party on Manufactured Nanomaterials to elaborate and implement a programme of work which aims to promote international cooperation in the health and environmental safety related aspects of manufactured nanomaterials.

The Working Party is now undertaking six projects in the area, with ISO/TC 229 actively participating in two of these: Safety Testing of a Representative Set of Manufactured Nanomaterials and Manufactured Nanomaterials and Test Guidelines. To facilitate this work, a category A liaison has been established and a collaboration agreement is currently under development.

The field of worker and public safety is also the basis of a category A liaison with the EC Joint Research Centre, Institute for Health and Consumer Protection, at Ispra in Italy.

There is also a liaison with the EC Institute for Reference Materials and Measurement, which complements the liaison with the ISO Committee for Reference Materials (REMCO).

Despite the quite extensive, and growing, membership of TC 229, 28 P members, 9 O members and 20 liaisons (16 internal and 4 external), a number of small economies would like to be involved but do not have national infrastructures to support participation.

The recent establishment of a category A liaison with the Asia Nano Forum (ANF) will allow such economies in South-east Asia to contribute to and learn from ISO/TC 229 activity, whilst not participating directly in the committee.

Engaging with a regional nanotechnology organization through a formal liaison could provide a model for other emerging/developing economies, particularly in Africa and South America.

With economic projections suggesting that nanotechnologies will contribute more than USD 1 trillion annually to the world economy by 2015, it is clear that nanotechnology will have a global impact and is anything but small scale!

In closing I would like to take this opportunity to extend my grateful thanks, and that of ISO/TC 229, to all of the contributors who have made this issue of *ISO Focus* possible.



Dr Peter Hatto, Chairman of ISO/TC 229, Nanotechnologies, and Director of Research, IonBond Ltd.