

The role of ISO in the governance of nanotechnologies

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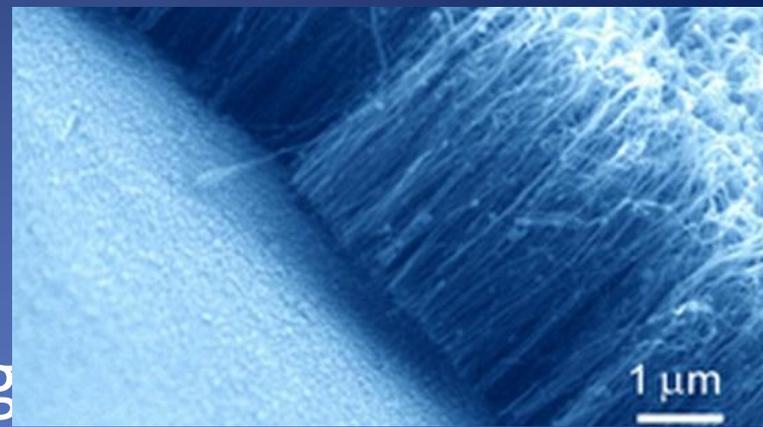
Research project

- Carried out in cooperation with Standards Norway
- Sept 09 – June 10
- Financed by NFR ELSA program
- Included participation in ISO work

In this presentation

- I will briefly present ISO's nanotechnology initiative
- I will claim that as ISO intends to have significant impact on nanoscience, nanotech development and regulation, it takes on a role that opens up questions of legitimacy
- I will discuss how TC 229 seems to perform related to such legitimacy issues

Nanotechnology



- ‘the study of the controlling of matter on an atomic and molecular scale’ (Wikipedia)
- involves manipulation or study of objects with at least one dimension at the nano-scale (1 meter = 1 billion nm)
- great promises with regard to energy efficiency, sensors, materials, health, food production/safety, etc.

Problems

- The benefit of nano is that nanomaterials have novel characteristics at the nanoscale – this is also the potential problem
- Lack of scientific knowledge of health and environmental effects of nanoscale particles and materials
 - Increased toxicity is observed

Innovation outspeeds research and regulation

- Risk assessment on the macro scale is not appropriate for the nanoscale – or must at least be modified in order to encompass nanoscale characteristics
- Regulators await research
- Researchers uncover increasing knowledge gaps

ISO takes its shot

- ISO does not need to go through all the motions like state legislation must
- May have the capacity for producing frameworks more rapidly than states – or the scientific community
- EC's New Approach calls for standards so the ISO standards will be important in nanotech regulation

Therefore:

- ISO initiated a Technical Committee on Nanotechnologies (TC 229) in 2004
- 4 WG: terminology & nomenclature, measurement & characterisation, HES, product specifications
- Consists of technical experts from 30 participating countries
- Cooperates with CEN, except for product specifications and labelling

TC 229

- will ‘help create a smooth transition from the laboratory to the marketplace, promote progress along the nanotechnology value chain [...] and facilitate global trade.’ (from the ISO Nanotechnology Business plan)
- As nanotechnology is intrinsically linked to nanoscience ISO also defines the premises for science by standardising terminology and measurement methods – a new role for ISO → the standards need scientific legitimacy

Scientific legitimacy I

- What makes ISO the best place for making the premises for science? (the terminology, the measurement methods, etc.)
- ISO's goal is trade and not open, critical inquiry and exploration

Scientific legitimacy II

- The scientific community has not reached consensus yet. It is a young field and most discussions are still open. It is also a heterogeneous field with many disciplines. Fixing the field at this point in time may hinder necessary exploration
- Even if ISO can make the participant experts agree, will they be hit by the diversity when the standards are published?

Scientific legitimacy III

- How can you standardise a field characterised by uncertainties and large knowledge gaps? There is disagreement about how uncertain nano is – does standardising assume an optimistic approach?
- Most agree that we do need standards – but maybe this is more or less a wish for a situation with more knowledge?
- In all cases: the uncertainty seems to be a practical problem in TC 229

Standards as value choices

- Standardisation is not merely a technical issue
 - Making the fundamental choices of definitions and measurements involve value choices – for instance: should the limit go at 100 nm? What about particles at 120 nm that exhibit the same characteristics?
 - And HES standards obviously involve value choices that will affect us all
- It is therefore important that the standards are made in a way that is good for all concerned parties: workers, consumers and the environment – and society in general
- The standards should also have social legitimacy

Social legitimacy - participation

- ISO is a private organisation and all work in a Technical Committee is unpaid
- Corporations and countries with industrial interests pay experts to take part
- ISO welcomes also other stakeholders, but they very often have problems financing their travel costs and work hours
- Consumers is an exception, but participation is difficult for consumers too

Transparency

- If we do not have consumer representatives, representatives from the environment movement, and a broad range of experts, etc. in the processes, this might have been acceptable if we could check on the processes to see if these concerns are taken into consideration
- However, there is limited transparency in the ISO work, for the general public, and even for registered experts.
- Moreover, nanotechnology standardisation is so technical that it is not easy for anyone to validate the work without having expertise and following the discussions

TC 229's response to these issues

- They recognise them and have set up two task groups to help address the issues: Task Group on Sustainability and Task Group on Consumer and Societal Dimensions
 - The work plans are good, but there is hardly any progress in these groups
- Big challenges to making good nanotech standards!

Status

- Few standards are produced yet – it remains to be seen how the standards will be received by the scientific community → to what extent they will have scientific legitimacy and be embraced by a wider scientific community
- Still too few stakeholder representatives in the processes – large uncertainties as to how the standards will come out with regard to wider societal concerns

Conclusion

- Much more people – both experts and stakeholder – should get involved in the processes in order to ensure scientific and social legitimacy of the standards
- Could the TC 229 processes be more systematically linked with the more general scientific community? Or would this render the processes so inefficient that they would break down?
- Broader participation is a responsibility of ISO and the national standardisation organisations and authorities

Does it have any consequences?

Norway is about to close down its mirror committee on nanotechnology

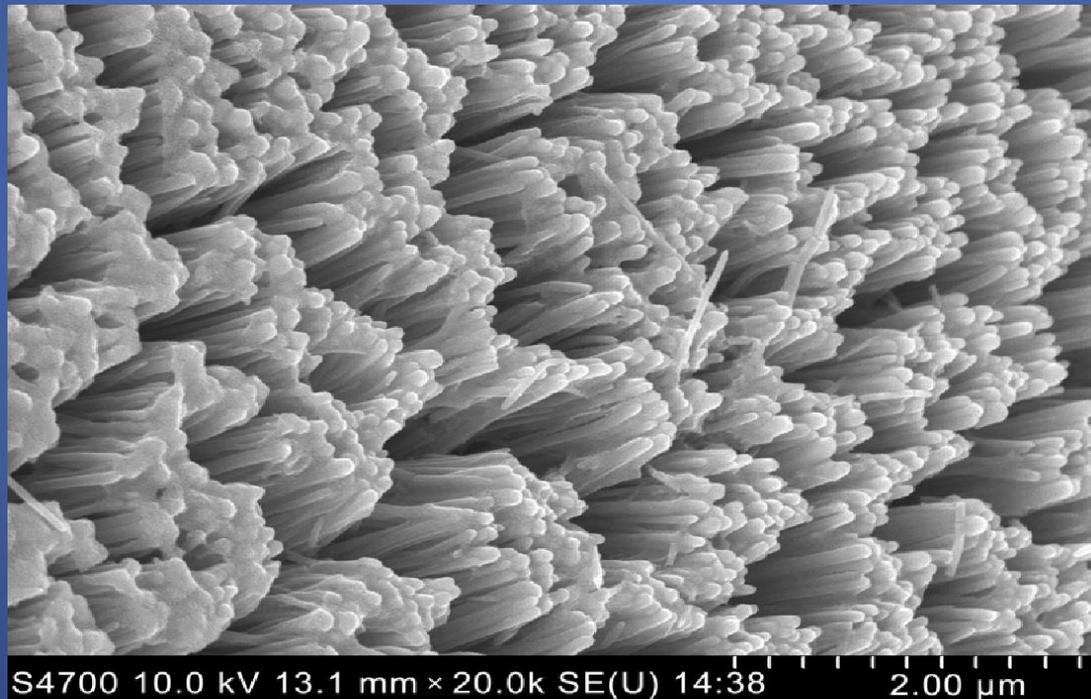
Still, we will use the standards

There will not be any independent validation of the standards

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Thanks!

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Pic: Nanorod Dye-Sensitized Solar Cells. Source: Nicholas Bwana,
<http://www.nanopicoftoday.org/>