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Examining Nanotech Inventions

Patenting trends in nanotechnology have often been described as chaotic. And deservedly so, with the issuance of “breathtakingly broad”, and often conflicting, claims, allegations that valid claims are being rejected and even warnings that nanotech patents could hinder the development of nanotechnology. On a practical level, the trans-disciplinary nature of nanotech inventions is at odds with the way in which patent applications are classified by patent offices into a discrete technical area. Patent examiners too are assigned patent applications according to their own specific technical training and often lack the interdisciplinary expertise that is required to recognise the potential applications of a nanotech invention and, accordingly, to perform a full prior art search. It is inevitable that such attempts to “fit” nanotech inventions into the present technical and legal framework of the patent system have caused problems.

There are, however, clear signs that the situation is improving. In October 2004, the US Patent and Trademarks Office (USPTO) announced the creation of a new classification for nanotechnology. Class 977, as it is known, serves as a cross-reference to help examiners, inventors, and researchers search nano-related documents at the USPTO. Moreover, the long-awaited publication of Class 977 into 263 subclasses has finally happened and provides a far more comprehensive and accurate cross-reference. From the European perspective, a Nanotechnology Working Group at the EPO has created an interdisciplinary nanotechnology tagging system to identify patents falling under the nanotechnology definition used by industry and government funding programs. This tagging system greatly improves the efficiency of interdisciplinary search. The group is also responsible for ensuring the availability of non-patent literature on nanotechnology and for implementing the training of specialist patent examiners.

Whilst these measures have certainly helped, there is perhaps still some way to go in ensuring that the assessment of nanotech inventions before the various patent offices is consistent, fair and ethical. Nonetheless, despite the present uncertainties of patenting in this area, experts agree that private and public sector entities are “rushing to the patent office in record numbers to patent nanotechnology inventions”. Indeed, it has been said that nanotechnology is the first field “in which people started patenting basic ideas at the outset”.

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Class 977 and Interpretation of Nano-Jargon

It has taken the USPTO nearly two years to define the Class 977 cross-reference into over two hundred subclasses. The subclasses are broadly divided into groups as follows:

- “Nanostructure” – 140 subclasses
- “Mathematical Algorithms, e.g., Computer Software, etc., Specifically Adapted for Modelling Configurations or Properties of Nanostructure” – not further divided
- “Manufacture, Treatment or Detection of Nanostructure” – 61 subclasses
- “Specified Use of Nanostructure” – 61 subclasses
- “Miscellaneous” – not further divided.

The term “nanostructure” is explicitly defined and means “an atomic, molecular or macromolecular structure that:

- (a) has at least one physical dimension of approximately 1-100nm; and
- (b) possesses a special property, provides a special function, or produces a special effect that is uniquely attributable to the structure’s nanoscale physical size.”

The recent subdivision of Class 977 not only offers an insight into the searching procedures used by Examiner’s at the USPTO, but the class definition provides those faced with the task of drafting patent specification for nanotech inventions with clearer guidance for formulating patent claims in a way which will ensure the broadest possible scope of protection. For example, whilst the use of the nano-prefix has proved lucrative in attracting investment and public

interest in a product or a process, it is clear that a nanostructure will only be classifiable in Class 977 if the patent specification has been drafted so that a special property or special effect that is uniquely attributable to the structure's size is apparent. Such a "special effect" will also serve to establish an inventive step over the prior art since the USPTO still follow the principal adopted in Application of Troiel, 274 F.2d 944, 949 (C.C.P.A 1960) that mere change in size, although possibly sufficient to establish novelty, is not enough to establish an inventive step.

The use of nano-jargon, such as "bucky-ball", "nanotube", and "nano-wire" can also cause problems in interpreting the proper scope of a claim where the specification is silent as to the exact scope of size range. USPTO policy indicates that where it is necessary to interpret a nano-term, and worked examples provide the only indication of scope, examiners may require claims to be explicitly limited to the values given in the specific examples. For this reason, it is vital that a precise statement of size range should be included in a patent specification directed to a nanotech invention in order to avert the possibility that an unduly narrow interpretation of the claims is applied.

Haseltine Lake's Cross-Disciplinary Nanotechnology Team

A cross-disciplinary team of patent attorneys, each with specialist skills and experience but sharing an over-riding enthusiasm for and an interest in nanotechnology in all its forms and applications. Members of the team meet regularly to explore the overlap and interplay of their various disciplines and to brief each other on international developments. We exchange information with Haseltine Lake's network of international attorneys. This keeps us informed about developments in the USA, Japan, China and other key regions. In return, we are able to share our knowledge of European (EPO), UK national and German national patent prosecution in the nanotechnology area.



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