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Legal implications of the nanotechnology patent land rush

By Michael Berger, Copyright 2007 Nanowerk LLC

(Nanowerk Spotlight) The Oklahoma land rush of 1889 and similar land runs were events in which previously restricted land of the United States was opened for homesteading on a first come, first claim basis. A number of the individuals who participated in the run entered early and hid out until the legal time of entry to lay quick claim to some of the most choice homesteads. These people came to be identified as "sooners" and their actions led to hundreds of legal contests. Nowadays, universities and companies, from start-ups to multinational conglomerates, are rushing to aggressively stake out their turf in the nanotechnology patent area. The "sooners" in this nanotechnology patent land rush may be the ones who were issued what some say are "unduly broad" patents early on, in the hope of getting a windfall of nanotechnology intellectual property (IP) rights. While not violating the rules intentionally, upon re-examination some broad patents might not hold up to the United States Patent Act's requirement for full and complete disclosure. This uncertainty provides fertile grounds for possible litigation over nanotechnology patent claims based on broad and imprecise definitions and descriptions. Efforts are underway to address some of these problems.



Oklahoma Land Rush

Reflecting the growing concerns over this issue, we have covered nanotechnology patent rights in a number of Nanowerk Spotlight articles over the past year, from a general overview on IP rights ([Nanotechnology and intellectual property issues](#)), specific issues with patents in the carbon nanotube area ([Growing nanotechnology problems: navigating the patent labyrinth](#)) to the sheer numbers of nanotechnology patents issued ([The patent land grab in nanotechnology continues unabated, creating problems down the road](#)).

"As scientists sort out and document the results of their research, corporate entities continue to seek and carve out far-reaching patent rights in what is now a full scale patent 'land grab'" Dr. Raj Bawa tells Nanowerk. "As this trend unfolds, uncertainty is growing amongst researchers, developers, policy-makers and investors regarding who really owns what particular swath of technology in the rapidly-expanding body of nanotechnology intellectual property. Some fear that the far-reaching patent rights provided by early nanotechnology patents clearly overlap."

Bawa is a registered patent agent and holds a faculty position at Rensselaer Polytechnic Institute in Troy, New York where he also serves as advisor to the Office of Technology Commercialization. Together with several colleagues from the legal field he co-authored a recent article titled "[Broad Claiming in Nanotechnology Patents: Is Litigation Inevitable?](#)".

Bawa points out that some commentators, ranging from university experts to government agencies, blame this trend of uncertainty and patent overlaps on problems at the U.S. Patent & Trademark Office (USPTO), including a delay in implementing nanotechnology training for examiners. Further contributing to this uncertainty is the granting of patents of questionable validity and scope, as well as a growing backlog of unexamined patent applications and increasingly lengthy periods for patent pendency.

"Add to this backdrop the limited number of judicial opinions on patents involving nanotechnology and a lack of standardized terminology, and you have a patent landscape that is almost impossible to navigate in certain nanotechnology sectors like for instance carbon nanotubes" says Bawa.

The USPTO has started to address issues from its end by adding a new cross-reference digest to its [Class 977 Nanotechnology](#) section. As part of its continuing effort to improve the ability to search and examine nanotechnology-related patent documents, the agency has created over 250 cross-reference art collection subclasses for nanotechnology.

A major issue in potential legal conflicts over patent claim coverage is the definitions used in the patent applications. In the Wild West of nanotechnology terminology there is considerable confusion over what is what and there isn't even a clear and generally used definition for the term *nanotechnology* itself. The same is true for such terms as *nanoparticles*, *nanostructures* or *nanomaterials*, just to name a few. Usage of such broad terms and ambiguous descriptions of even more specific technical terms such as *carbon nanotubes* or *quantum dots* in patent applications is a sure recipe for conflicting terminology and a dispute over what was meant and intended.

Bawa explains that, even if a patent has been issued already, a claimant could try to dispute it and get it invalidated if the original patent application violates the United States Patent Act at 35 U.S.C. §112. This paragraph contains three distinct requirements for patentability: "(1) a complete written description — setting forth the full and complete details of making and using the invention; (2) enablement — the specification must teach one skilled in the art how to make and use the full scope of the invention without undue experimentation and (3) best mode — of carrying out the claimed invention known at the time of filing for a patent needs to be set forth." A claimant could try to get the original claim re-interpreted by a court and argue that the use of broad or unspecific terminology in early, broad patents might violate §112.

Owners of nanotechnology patents that lack a clear definition of claim terms may have to live with the uncertainty as to whether someone will dispute their claim at some point down the road. As a general strategy to avoid downstream problems, Bawa and his colleagues suggest that applicants file patent applications that are not unnecessarily broad in scope.

"Patent applicants must resist the urge to claim overly broadly in the hope of getting a windfall of nanotechnology IP rights" says Bawa. "Such attempts may be responsible in part for creating uncertainty as to who owns what across the nanotechnology landscape."

Efforts to develop a common terminology for nanotechnology (such as ASTM's [Terminology for Nanotechnology Standard](#)), improved classification systems from patent offices, and self-constraint from patent applicants will go a long way in reducing the existing uncertainties in the nanotechnology patent field.