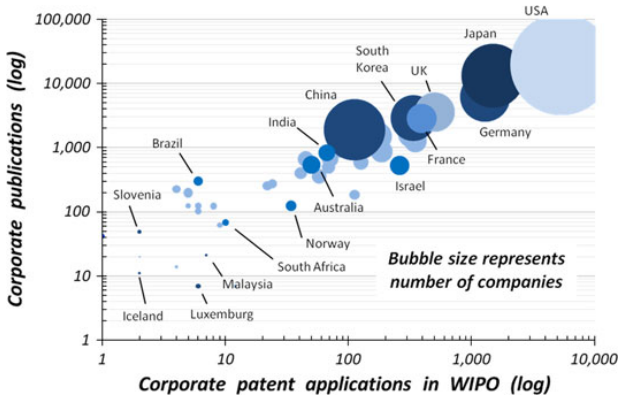
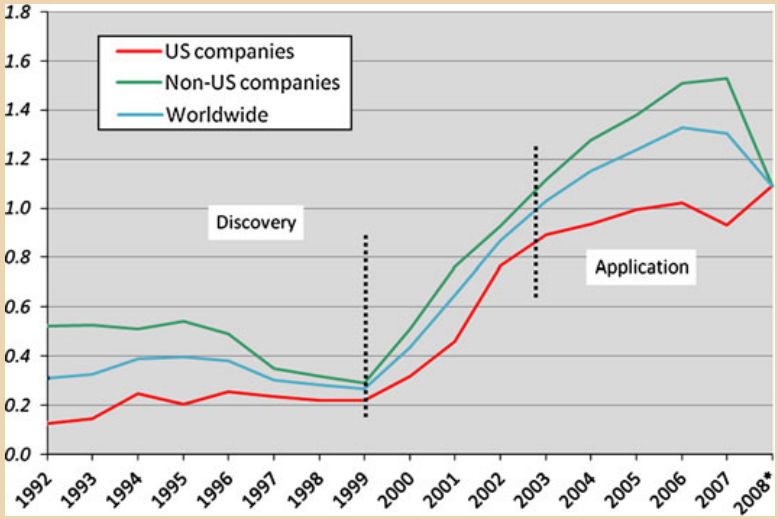
The Center for Nanotechnology in Society
ARIZONA STATE UNIVERSITY

The Emerging Dynamics of Nanotechnology Commercialization: How are Corporations Entering into Nanotechnology Innovation?

Early predictions suggested that by 2015, about one-tenth of the world's manufacturing output would be associated with nanotechnology. However, the 2007-2008 global financial crisis and subsequent downturn have dampened nanotechnology's growth. Although more than 1,000 nanotechnology-enabled products have been inventoried as of the end of the last decade, many of these are incremental improvements to existing products rather than transformative innovations. Thus, after a decade of sustained public funding for nanotechnology R&D in the United States, the point has been reached where further public investments are increasingly scrutinized based on progress in commercialization. Given the timeliness of this issue, the *Journal of Technology Transfer* recently asked CNS-ASU to guest edit a special symposium issue that focused on nanotechnology's commercialization accomplishments, strategies and trajectories.





CNS-ASU has developed a bibliometric search method that has produced real-time databases of nanotechnology publishing and patent activity in the U.S. and globally. Researchers at Georgia Institute of Technology used these databases to examine, from a global perspective, where and how corporations are entering into nanotechnology innovation. They found that a shift has been underway in nanotechnology corporate activity, from research discovery prior to 2000, to patented applications (commercialization) after 2003.

The results also indicate that the general characteristics of national innovation systems in developed countries have a positive and significant effect on both corporate commercialization as well as corporate R&D. These findings highlight the ongoing importance of broad-based national policies for investing in both nanotechnology R&D and commercialization. The results further show that both national and international factors are significant, highlighting the need for national policies that include an open and international orientation.

The seven articles in the journal's symposium issue demonstrate that there are diverse and non-linear pathways to nanotechnology commercialization, with considerable uncertainty and risk, and much experimentation in strategies for transferring research knowledge into usable and marketable applications. Further work needs to be undertaken to probe both the general and specific features of nanotechnology commercialization and to assess its implications.

(To access the entire symposium issue:
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