



The Center for
Nanotechnology in Society
ARIZONA STATE UNIVERSITY

New Tools Reveal Worldwide Nanotechnology Development Trends

Monitoring patents and research citations enables analysts to determine the growth and direction of emerging technologies. However, because these counts, as well as the connections between them, can run in the millions and come from a myriad of sources, compiling comprehensive and digestible data presents challenges.

To help overcome these challenges, **Dr. Jan Youtie, Dr. Philip Shapira**, and their Georgia Tech colleagues have developed research tools to better mine, compile, and present large sets of data and its interconnections to reveal innovation trends and pathways.

This past year, Youtie and colleagues used two of these tools—a two-stage bibliometric search method and a patent-mapping system—to create global datasets of nanotechnology research citations and patent documents covering 1990-2014.

More than 300 citations worldwide refer to the new tools, and the group's analyses of nanotechnology research and innovation have been used by several leading policy organizations, including the President's Council of Advisors on Science and Technology (PCAST) and the Organisation for Economic Co-operation and Development (OECD).

Youtie, Shapira, and colleagues used the new search method to provide an updated analysis of country-level comparisons of nanotechnology publications for 2011-2013 for the PCAST October 2014 report covering the fifth assessment of the National Nanotechnology Initiative. The analysis revealed that China continues to surpass the US in total number of nanotechnology research publications, as well as in citations of their papers. Further analysis revealed, however, that top Chinese scholars' are more likely to cite each other, while top US scholars are not, providing a possible explanation for the increased Chinese citations.



Dr. Jan Youtie co-leads the Real-Time Technology Assessment (RTTA 1) at CNS-ASU that focuses on the scope of the Nanoscale Science and Engineering (NSE) enterprise and its effects on public values and outcomes.

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REPORT TO THE PRESIDENT AND CONGRESS ON THE FIFTH ASSESSMENT OF THE NATIONAL NANOTECHNOLOGY INITIATIVE

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