

# China becomes a physics powerhouse

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Judged by the astonishing increase in journal papers written by scientists in China, there can be little doubt that China is finding its place as one of the world's scientific power houses. Michael Banks, *Physics World's* News Editor, quantifies this surge in scientific output from China and asks whether quality matches quantity in August's *Physics World*.

Nanoscience, quantum computing and high-temperature superconductivity are three of the cutting-edge areas of physics that have seen particularly large increases. Published journal articles in nanoscience, for example, with at least one co-author based in China, have seen a 10-fold increase since the beginning of the millennium, rising to more than 10,500 in 2007.

China has already overtaken the UK and Germany in the number of physics papers published and is beginning to nip at the heels of the United States. If China's output continues to increase at its current pace, the country will be publishing more articles in physics - and indeed all of science - than the US by 2012.

Quantity alone however is not enough. The number of times a journal paper is cited by other academics in their own journal papers is often used as a guide to journal papers' quality. Unfortunately for China, they are currently a long way from the national citation top spot, ranked in 65th for physics, just ahead of Kuwait, with an average of 4.12 citations for each of the papers published.

As China has only just started to publish large volumes of work, it is not

a fair reflection. Werner Marx, an information scientist from the Max Planck Institute for Solid State Research in Stuttgart, Germany, who carried out a bibliometric study for the Physics World article, said, "The figure is still quite impressive, and I estimate this will rise substantially in the next few years."

All indications suggest that China's propensity for world-leading research is growing. In March this year scientists in Japan first reported a new class of iron-based superconducting material that can conduct electricity without resistance when cooled to below 26 Kelvin (K). Researchers in China quickly picked up the baton and, within a month of the initial Japanese discovery, had boosted the transition temperature at which the material loses all its electrical resistance to 52 K.

Werner Marx said, "China has become a notable factor in the scientific landscape. Usually scientific development in nations does not show such a strong acceleration as we have seen in China, so it will be interesting to see how it responds and develops in the future."

Source: Institute of Physics

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