

China to train more talents for nuclear fusion research

China is serious about fusion and space.

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A training center for nuclear fusion research has been established at Zhejiang University in Hangzhou, capital city of east China's Zhejiang Province, to boost expertise in the nuclear fusion field.

Zhejiang University State Fusion Theory and Simulation Center will be China's first research institute specializing in nuclear fusion training.

The center will train outstanding talents for the International Thermonuclear Experimental Reactor, or ITER, which will be commissioned in 2016. China is one of the seven participants in the international cooperation program. The other six are the United States, the European Union, the Republic of Korea, Russia, Japan and India.

The program has been included in China's long-term plan for scientific development. It is hoped that reactor ignition can be achieved in 2020. To achieve the goal, plasma physics talents are desperately needed.

However, there are only two or three universities in China that offer plasma physics studies. The shortage of talents in this field is a brake not only on nuclear fusion research but also on China's other high-tech programs, including deep space exploration and high-energy-density physics.

Hence the new talent training center. Major sponsors of the center include Zhejiang University, the Research Institute of Plasma Physics under the Chinese Academy of Sciences, the Southwestern Research Institute of Physics and State Program 863 for high technologies.

The center will have 15 to 20 full-time researchers and 10 to 15 visiting scholars. They will include Chinese academicians as well as top plasma physics scientists from abroad, according to Sheng Zhengmao, deputy head of the center.

The center will offer 20 masters, 30 PhD and another 20 post-doctoral research positions to young candidates both from home and abroad, Sheng said.

The ITER program will offer scientists an opportunity to achieve their dream of controlling nuclear fusion energy.

Controlled nuclear fusion, which replicates the energy generating process of the sun, is considered to be an efficient source of unlimited, clean energy to offset the dearth of fossil fuels such as oil and coal.

Scientists believe that deuterium can be extracted from the sea and enormous amounts of energy obtained from a deuterium-tritium fusion reaction at a massive temperature of 100 million degrees Celsius. After nuclear fusion, the deuterium extracted from one liter of seawater would produce energy equivalent to 300 liters of gasoline.

If the nuclear fusion technology is commercialized, it could provide energy for mankind for more than 100 million years, scientists believe.

Nuclear fission has been dogged by as many problems as benefits, whereas nuclear fusion will be a more viable solution for the world's energy supply, said Werner Burkart, Deputy Director General of the International Atomic Energy Agency.

China's self-designed full superconducting experimental Tokamak fusion device, dubbed EAST (experimental advanced superconducting Tokamak) has now been completed and has entered trials. It is the first of its kind in the world (!)

Since EAST operates in a similar way to ITER devices, it should provide useful research and experimental expertise for ITER, said Xu Guanhua, Minister of Science and Technology.