## Project Title

# Semiconductor nanowire technology for energy conversion and storage

## Researcher

**Prof. Peidong Yang**

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| Country | USA |
| Field | Chemistry |
| Scientific Affiliation | University of California, Berkeley |

## Abstract

Prof. Peidong Yang has pioneered semiconductor nanowire based technology for efficient solar energy conversion, artificial photosynthesis and waste heat recovery. He has conceived molecularly designed nanosystems that bridge chemistry, materials science and biology to solve some of the most vexing energy problems of our time. His discovery of room-temperature ultraviolet nanowire laser has led into a new area of exciting fundamental research "nanowire photonics". He also discovered that these semiconductor nanowires, having high refractive index, can function as low-loss optical waveguides for UV and visible lights both in air or liquid medium. Using a KNbO3 nanowire as key component, Yang has created an optical probe that potentially combines fluorescence microscopy and force microscopy. The Yang group has made significant contribution in the photovoltaic area by introducing (for the first time) the idea of nanowire solar cell. Early 2013, his group announced the first fully integrated nanosystem for direct solar water splitting. An alternative approach was introduced in his group in which the microorganism facilitated not only CO2 reduction, but the initial synthesis of the inorganic light harvester as well through a self-photosensitization mechanism. Recently, the photosynthetic biohybrid systems introduced by the Yang's group using the strengths of inorganic materials and biological catalysts.

## Biography

Prof. Peidong Yang has received his B. S. in Chemistry from University of Science and Technology of China, in 1993 and Ph.D. in Chemistry from Harvard University in 1997. Since he started his work in Berkeley University in 1999, his dedication to his work has brought him an international wide recognition. As a result, more than 340 papers have been published in top journals. Their work is often highly cited. For example, the 2001 Science paper was cited ~10000 times in the past decade. Professor Yang has received many awards for his highly cited publications and innovations. He has co-founded two startups Nanosys Inc. and Alphabet Energy Inc. More specifically, his group has made significant contribution in energy conversion/storage research using semiconductor nanowires.