

Photovoltaic Cell from Thermophilic Cyanobacteria (Yissum)

code: 15-2009-2196

[Rachel Nechushtai](#), HUJI, Faculty of Science, The Alexander Silberman Institute for Life Sciences

[Itamar Willner](#), HUJI, Faculty of Science, The Institute of Chemistry

Photochemical nanoelectrode stable up to 80°C

Categories	Energy, Optoelectronics/Photonics, Nano Structures, Cleantech
Development Stage	Advanced research stage – proof of concept
Patent Status	Pending
Market	Global nanoelectronics market to reach \$409.6 billion by 2015. Integration of molecular biology and nanoelectronics creates avenues for developing hybrid devices for utilization in a wide range of biological and medical applications.

Highlights

- System that uses the natural photosynthetic light-harnessing system of cyanobacteria to convert light to electricity or fuels.
- In vitro system derived by isolating the photosynthetic complex from native bacteria that grow in hot springs and adding platinum to convert light into electric current or fuels.
- Combines nanotechnology, complex chemistry, and biotechnology to produce a functional biological molecule
- Significant current already achieved - $>2 \text{ A/cm}^2$ of electrode surface with relatively high efficiency (5%)

Our Innovation

Heat-stable, nano-size photoelectrochemical cell based on the photosynthetic system derived from thermophilic bacteria

Key Features

- Proteins of the photosynthetic system are stable up to 80°C
- Good coverage of solar spectrum
- Scientific methodology of assemble the photosynthetic systems on electrodes

Development Milestones

Seeking funding for further development of the system directed to increase its efficiency.

The Opportunity

- The solar market is growing at about 40% per annum
- Unique biomaterial based energy conversion system

Contact for more information:

Dov Reichman , VP Business Development - Chemistry & Physics, +972-2-6586692

Yissum Research Development Company of the Hebrew University of Jerusalem
Hi-Tech Park, Edmond J. Safra Campus, Givat-Ram, Jerusalem P.O. Box 39135, Jerusalem 91390
Israel Telephone: 972-2-658-6688, Fax: 972-2-658-6689