Novel Photovoltaic Desalination System

Tech ID: 27328 / UC Case 2016-005-0

CONTACT

Andrew M. Van Court
amvancourt@ucdavis.edu
tel: .



ABSTRACT

Researchers at the University of California, Davis have developed a novel method of desalination without an external power source.

FULL DESCRIPTION

The World Health Organization estimates that 20% of the world's population has inadequate access to drinking water. This becomes comprehensible when you consider the scarcity of portable water: 99.3% of total water is either too salty, or inaccessible (ice caps). In the search to expand access to permissible portable drinking water, desalination systems have become an area of growing interest. The current standard approach to desalination, called Reverse Osmosis (RO), has proved to be too costly in terms of energy consumption and operation cost to apply on a large scale.

Researchers at the University of California Davis have developed a novel method of desalination which is integrated directly with a thin-film solar cell that provides enough energy to run the system without an external source. The integrated device utilizes the electric fields generated in a solar cell to tune the thickness of the electric double layer (EDL) that arises in nanopores during fluid flow. The EDL is then used to selectively reject ions passing through in order to achieve desalination. This system is an upgrade from current standard desalination system (RO) in that it reduces both energy and operation costs, making large scale deployment a possibility.

APPLICATIONS

- Desalination of water systems

FEATURES/BENEFITS

- Primary source of energy is solar illumination
- Channels formed in a PVD system
- Minimized operating costs
- Capacitive
- Electrical based system
- Reduced pore clogging
- Larger channel size reduces flow resistance
- Can be used with smaller pressures and pumps
- Lower energy consumption compared to traditional RO systems

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,361,329	07/23/2019	2016-005

INVENTORS

- Qu, Luman
- Radousky, Harry B.
- Zimanyi, Gergely T.

OTHER INFORMATION

KEYWORDS

solar, solar cell, potable drinking water, electric double layer, desalination

CATEGORIZED AS

- **Energy**
  - Solar
- **Environment**
  - Other
- **Engineering**
  - Other

RELATED CASES

2016-005-0

University of California, Davis
Technology Transfer Office
1 Shields Avenue, Mrak Hall 4th Floor,
Davis,CA 95616

Tel: 530.754.8649
techtransfer@ucdavis.edu
https://research.ucdavis.edu/technology-transfer/
Fax: 530.754.7620

© 2017 - 2019, The Regents of the University of California
Terms of use
Privacy Notice