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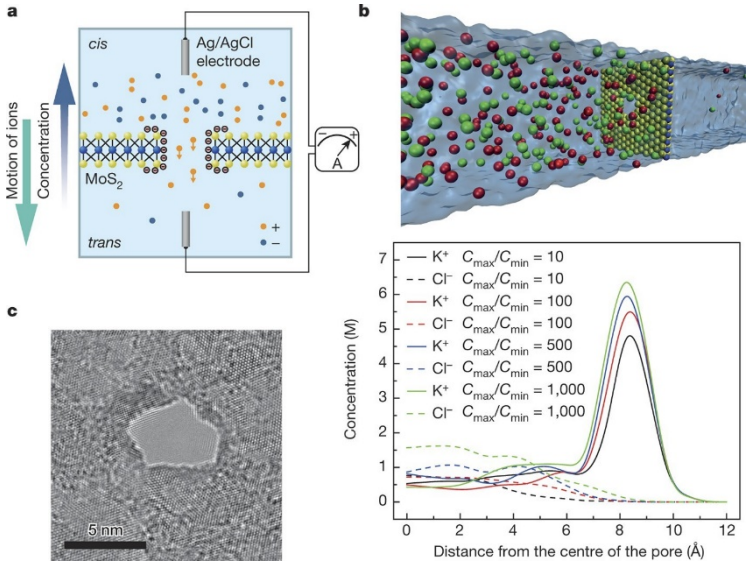
Licensing Opportunity

TTO – Technology Transfer Office

Osmotic power generator



a, Salt solutions with different concentrations separated by a nm-thick MoS_2 nanopore membrane. An ion flux driven by chemical potential through the pore is screened by the negatively charged pore, forming a diffusion current composed of mostly positively charged ions. **b**, Top panel, a typical simulation box used in molecular-dynamics simulations, showing the nanopore membrane (in blue and yellow) and the salt (green and red) in solution. Bottom panel, molecular-dynamics-simulated potassium-ion and chloride-ion concentrations as a function of the radial distance from the centre of the pore. The region near the charged wall of the pore is representative of the electrical double layer. C_{max}, maximum concentration; C_{min}, minimum concentration. **c**, Example of a TEM-drilled MoS_2 nanopore of diameter 5 nm.

Ref. Nr

6.1590

Keywords

Power generator, blue energy

Intellectual Property

EP and US granted
WO 2014/141168 A1

Publications

Nature **volume 536**, pages 197-200(2016)

https://actu.epfl.ch/news/electricity-generated-with-water-salt-and-a-3-atom/

Date

19/02/2021

Description

The technology is a power generator using nanopore technology to convert an osmotic salt gradient into electricity.

It is a unique solution that does not rely on pressure-retarded-osmosis (PRO) but harnesses differences in osmostic potentials.

Offering

Licensing or collaboration

Advantages and applications

Power generation using renewable sources (e.g. see water).

Scalable to generate high power density of several to tens of kWm-2.

Easily applicable to ultralow-power devices.