

13TH INTERNATIONAL CONFERENCE ON

ADVANCED MATERIALS AND NANOTECHNOLOGY

OCTOBER 26-28, 2017 OSAKA, JAPAN

NANOPUMP - Nanopumping Effect in nanochannels by surface acoustic wave**Insepov Zinetula Zeke, A M Ainabayev, D Zhumagulov and K B Tynyshtybaev**

Nazarbayev University Research and Innovation System, Kazakhstan

Innovative nanofiltration technology for water desalination and other fluids purification from salts, germs, bacteria and viruses are based on so called Nanopumping (NP) effect, when a fluid flow through nanomembranes and nanochannels is actuated using Surface Acoustic Waves (SAW) is presented. In this work, based on our own research results on application of SAW for fluid flow actuation and SAW amplification effect by using graphene film and fabrication of nanochannels in ultrathin films by radiation method, we developed a working model of the nanopump, that can demonstrate a water filtration process in a much simpler way than the existing desalination and purification methods using carbon nanomembranes in which the fluid motion is triggered by SAW. Moreover, such nanopumping devices will be of practical interest for the development of future energy sources, e.g., for direct methanol fuel cells, hydrogen energy and nanoengine for medical robots, as well as for use in a wide variety of chemical, food and agricultural applications.

Biography

Insepov Zinetula Zeke is a Doctor of Physical and Mathematical Sciences and was a founding Faculty Fellow of the Skolkovo Institute of Science and Technology (Skoltech)/Massachusetts Institute of Technology (MIT) initiative. He has previously held positions at Albert Ludwig University of Freiburg, Kyoto University, Japan and Argonne National Laboratory. He is a well-known expert in the field of nuclear and radiation material science and one of the authors of the development of a new radiation technology by the method of irradiating clusters of gas molecules.

zinsepov@purdue.edu

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