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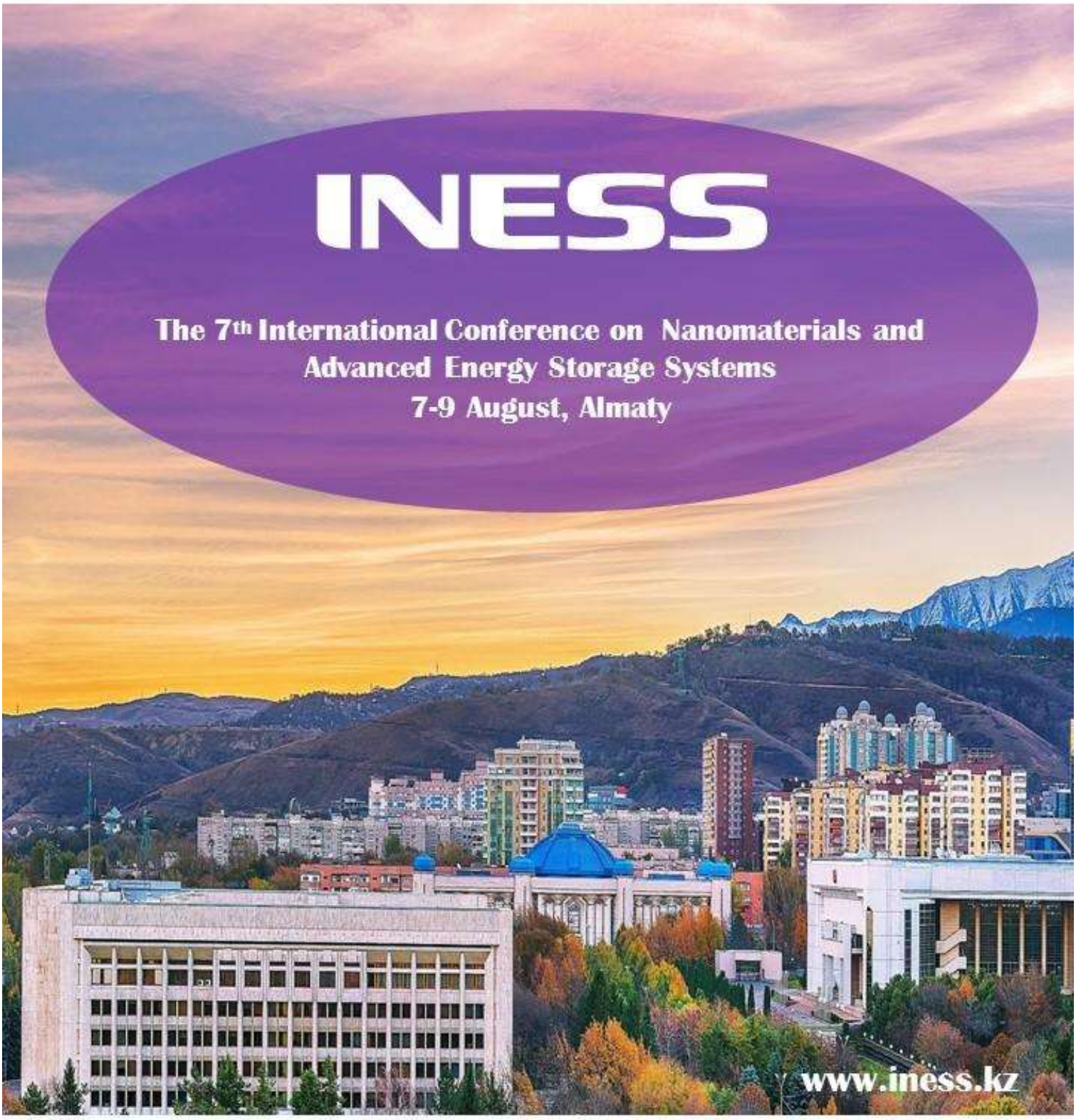
ABSTRACT BOOK



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Production of nano-dimensional fibers based on SrTiO3/PAN by electroforming method for photocatalytic applications

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Renewable hydrogen production is not yet popular because the cost is still high. Solar and wind power are the two main sources of renewable energy, and they are also promising sources for the production of renewable hydrogen.

There are various methods and technologies that have been developed for the production of hydrogen and some of them are already actively used. These technologies can be classified as:

1. Thermochemical method;
2. Electrolytic method;
3. Photolytic method;
4. Biochemical method.

Photocatalytic splitting of water is considered as artificial photosynthesis, since it is similar to the process of photosynthesis of green plants under the action of solar energy. Hydrogen production from organic matter in wastewater or from water can be achieved along with the principle of photocatalytic processes using solar radiation that reaches the surface of the earth daily.

In this study, we synthesized SrTiO3. TiO2 and Sr(NO3)2 were used as starting materials for the production of strontium titanate. The use of these materials allowed us to obtain advantages both with respect to the solid-phase method of synthesis, and with respect to the chemical method of deposition.

Nanoscale fibers based on strontium titanate/PAN were obtained by electroforming using synthesized strontium titanate powder. After obtaining nanoscale fibers, they were calcined at 600 ° C for 1 hour. It is shown that a high calcination temperature improves the crystallinity of strontium titanate, which helps to improve its photocatalytic properties.

As a result of this study, it was shown that nanoscale fibers based on SrTiO3/PAN could be used as photocatalysts for the production of hydrogen by splitting the water-organic alcohol mixture. As a continuation of the study, it is planned to photocatalytic decomposition of a water-organic alcohol mixture by the obtained fibers based on SrTiO3/PAN with hydrogen and oxygen and further improve their photocatalytic activity by adding metal particles.