

THUNDERSOTRM BATTERIES

Ksezonov M.S.

Scientific supervisor - Associate professor V.N. Yurdanova

Siberian Federal University

The growing needs and modern standards of using today electricity results in an increasing need of electricity. Existent resources one day will come to an end. As a result, it is necessary to find new sources of energy. Many scientists carry out researches in this field. One of them is Fernando Galembek.

Fernando Galembek used in his experiments two cylinders made of different materials. There is one cylinder inserted into another one. There were speed changes on the cylinders surfaces in the nitrogen atmosphere with different humidity.

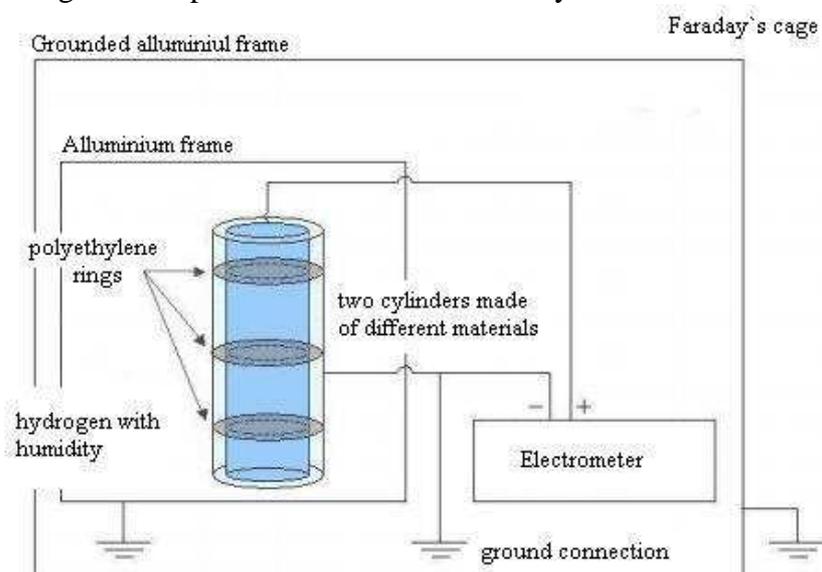


Fig. 1. The scheme of experiment.

Fernando Galembek in his experiments used two cylinders made of different materials. There is one cylinder inserted into another one. There is a speed change on the cylinders surfaces in the nitrogen atmosphere with different humidity. As a result of transmission nitrogen with water vapor through space between cylinders there was accumulating electrical charge on their surfaces. That charge was measured by special device, electrometer, thus scientist with his colleagues determined the dependence accumulating speed of that charge from air humidity.

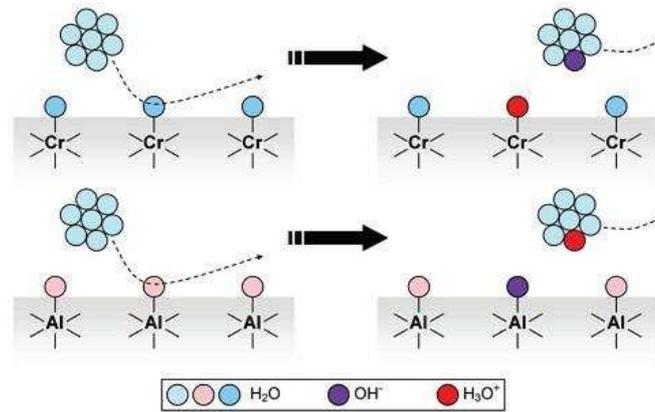


Fig. 2. The interaction between water particles with basic (above) and acid (below) oxides.

Neutral water molecules react in different ways with various oxides depending on their acid- basic qualities.

The electrostatic behavior of dielectrics is not well understood, and this is mainly because of a lack of consensus on the nature of species responsible for electrostatic charge buildup and dissipation. Recent Galembek's publications provide evidence for the participation of ions and electrons in electrostatic charging under various conditions.

Before that, people thought that drops of water are electrically neutral, even after contact with charged particles of dust and other liquids. However, new data evidences that it isn't right.

"There is water in the atmosphere which can be charge carrier and pass it to another matters, with which it contacts, - Galembek said. – We call it "gigroelectricity", which means humidity electricity." In the future there will be potential to create collectors. Those collectors will collect gigroelectricity and supply offices and dwelling buildings by it. "Thunderstorm batteries" will be more effective in regions with high relative humidity.

The effect of relative humidity on charge buildup and dissipation in dielectrics has been evidenced in recent papers from Fernando Galembek's laboratory with an intriguing result: in many systems, charging is faster under high relative humidity than in dry environments. This is in apparent conflict with common knowledge, according to which low humidity is conducive to the appearance of static electricity.

The effectiveness of high humidity to eliminate static charging from dielectrics is assigned in the literature to high surface conductance through thick adsorbed water layers, but this widespread argument cannot explain the faster charge buildup under high humidity that has been observed in many systems studied under well-defined conditions.

According to the scientist it will takes a lot of time to practical devise realization, which could collected gigroelectricity and provide the ability o use it in our homes.