

**ARE THE METEORITES CATHODE-ANODE SYSTEMS PLACED IN THE SOLAR WIND? IONIC CAVITIES BY EGD EFFECT ON THE SURFACE OF THE METEORITES.** *Földi T.<sup>1</sup>, Bérczi Sz.<sup>2</sup>*, <sup>1</sup>GEMINILUX, H-1117 Budapest, Irinyi J. u. 36/b. Hungary, <sup>2</sup>Eötvös University, Dept. Physics, Cosmic Materials Space Res. Gr., H-1117 Budapest, Pázmány s. 1/a, Hungary. (bercziszani@ludens.elte.hu).

**Abstract:** Electrostatic and electrogasdynamic (EGD) transport effects triggered by the solar wind's corpuscular, gamma-, X-ray and UV radiations may partially explain the bowl shaped cavitated surface of some meteorites.

**Introduction:** Orbiting surfaces are affected by the radiations and the solar wind from the Sun. Such effects were also studied on the Surveyor missions to the Moon. [1]. We used these effects in making an experimental lunar quasiatmosphere [2-7]. In this study we extended the possibility of the anode-cathode transport effects to the irradiated meteorite surfaces.

**How can work the meteoritic surface as an onode-cathode system:** The surfaces of the orbiting meteorites are always bombarded by the solar gamma, X-ray and UV radiation of the Sun and other corpuscular partricles of the solar wind. These sources deliver enough energy for outer surface of the meteorite that some electrons escape. Escaping electrons leave extra positive charge on the surface of the meteorite. Because of the gradually growing very high, from some 100 V up to 100 kV electrostatic potential, depending on the generating radiation. Charged meteorite surface acts as a cathode-anode system. [2-3]

**Cathode/Anode effects - ion transport on the surface:** Suppose that the charged meteorite meet with a rare ionized gas cloud (in the vicinity of the sun or in the ionosphere of Earth). The meteorite pushes positive ions but attracts the large negative ions. Impacts of the large negative ions may cause the ioncavity effect.

In this scenario all the surface is randomly bombarded. However, if the flux of the imoacting ions is large enough, then the self magnetic force field of this stream comprimes the ion-stream and causes expressed cavities on the surface. The local surfaces are hyperbolidodes (these are the bowl shaped cavities). The overall shape and the local relief of the meteorite are boundary conditions of the final cavity places and formation [8]. This affect causes local mass loss on all moving objects (meteorites and spacecrafts). In our experimental chamber we continue the studies of meteoritic ion-cavity formation. There we use oxide cathodes and water vapor for gas of large negative ions.

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