

Experimental studies of micro-particles obtained in the interaction of Brown's gas with metallic and non-metallic materials

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The interest regarding the Brown's gas (HHO) has been strongly increasing during the last years, both from practical and theoretical points of view. The need of advanced energy-saving technologies, having as low as possible environmental impact stimulates the researchers to perform large variety of experimental studies. In this regard Ilia Valkov (Yull Browan) has developed an innovative device (electrolyser), which produces a gas mixture with very specific properties. For instance, the burning of this mixture in the presence of different materials allows for their welding, which is impossible in other conditions.

Nevertheless still lacking a complete theory, describing unequivocally in details the physical and chemical properties of this mixture, known also as Brown's gas, great number of electrolyzers are offered nowadays on the market. This fact confirms the importance of Brown's gas from technological point of view.

In the present work we describe a specific patented design of an electrolyser's features in two water streams secured by a pump through two quartz pipes. The electrodes are allocated inside the pipes and are powered by a custom made device. The electrolyser generates Brown's gas ad hoc, which under well determinate powering ignites a spontaneous combustion, initiated in the gap between these pipes, thus appearing as a violet coloured plasma.

We have examined interactions of this plasma with different non-metallic and pure metallic materials. It was found that during these interactions the materials release microscopic particles, distinguished from each other by their general volumetric shape, especially those with a spherical or spheroidal shape.

The preliminary analysis of the particles by means of an electronic microscopy demonstrated the large variety of particles' formation process in function of the local plasma conditions and operational electrolyser parameters.

The opportunity to generate a micro- and nano-particles by means of the described electrolyser reveals opportunities for the development of innovative technologies, addressed to large variety of industrial and medical sectors.