Abstract Submitted
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Physical properties of DC discharge generated in He, Ar, N_2 and Air bubbles in liquid[1] ANTON NIKIFOROV, Gent University, Department of applied physics, Gent, 9000, Jozef Plateustraat 22, L. NEMCOVA, Brno University of Technology, Faculty of Chemistry Purkynova 118, Czech Republic, CH. LEYS, F. KRCMA, PLASMATECHNOLOGY, UGENT COLLABORATION, FACULTY OF CHEMISTRY, BUT COLLABORATION — DC excited discharge in liquid generated in bubbles of different gases (He, Ar, Air, N_2) has been investigated. V/C characteristics and emission spectra have been recorded in the range of discharge current from 10 up to 30 mA. Visual view of the discharge by fast imaging technique shows that plasma consists of filaments propagated in bubble in case of N_2 and Air and uniformly distributed in bubble in He and Ar. Gas temperature has been determined by simulation of OH band with different T_{rot},T_{vib}. Fitting of the experimental spectra has been carried out with two different rotational temperatures in order to take into account overpopulation of the OH radicals V/T distribution. It was revealed that for 5 micosS/cm conductivity T_{rot} in He discharge is 1200 K at I=10 mA and linearly increase up to 1600 K with grows of the current. Similar increase of T_{rot} from 1100 K (10 mA) to 1700 K (30 mA) is observed in Ar bubble discharge. In N_2 and Air plasma gas temperature is higher and almost constant at different currents: N_2 discharge T_{rot}=2200 K (10 mA) and 2500 K (30 mA); Air discharge T_{rot}=2200 K (current 10-30 mA).

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Anton Nikiforov
Gent University, Department of applied physics,
Gent, 9000, Jozef Plateustraat 22

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