

Abstract Submitted
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Course of organized structures in thermal plasma inside and outside argon plasma torch¹ JAN GRUBER, JIRI SONSKY, JAN HLINA, Institute of Thermomechanics AS CR, v.v.i., Academy of Sciences of the Czech Republic, Dolejskova 5, 182 00 Praha 8, Czech Republic — Arc chamber of direct-current (dc) argon plasma torch and area just above the nozzle outside of this dc plasma torch were observed by hi-speed camera. System of reflecting mirrors and transparent silica arc chamber walls were used to obtain simultaneous records of both i) cathode area with electric arc inside the plasma torch and ii) nozzle exit with resulting plasma jet outside the plasma torch. Such experimental arrangement allowed us to track localized repeating patterns (organized structures) in the arc chamber and in the plasma flow. Identification of various organized structures - for different experimental conditions - according to their origin and typical development is presented in this paper. Impact of 300 Hz ripple in arc current was compared between different areas of the plasma. Additional simultaneous observation of plasma flow in the same system by series of photodiodes was used for verification of the results.

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