

Abstract Submitted  
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**Diffuse Guided Microwave High Pressure Plasmas for General Lighting Applications with High Color Rendering Index** CH. KAISER, C.M. ÖGÜN, R. KLING, Light Technology Institute of the Karlsruher Institute of Technology, LIGHT AND PLASMA TECHNOLOGIES TEAM — This contribution deals with the development of a novel plasma configuration for discharge lamps. A guided microwave mode (at 2.45 GHz) is used to drive a diffuse, electrode less InI discharge lamp in the pressure range up to 7 bar. Argon was used as start gas in the pressure range from 05 mbar up to 200 mbar. The discharge is designed to work in the undercritical electron density limit at the interface between plasma and fused silica. This work deals with a detailed analysis of the influences of the start gas pressure, the lamp geometry, the amount of InI and the absorbed microwave power on the spectral behavior of the lamp, the lamps luminous efficacy and the gained color rendering index. Within the use of this discharge configuration, bremsstrahlung broadened radiation in the visible range could be observed. A color rendering index of 95 was gained within a microwave power consumption of 120 W. Furthermore, diffuse high pressure plasma columns in the length of 4 cm within a radius between 2 mm and 6 mm were obtained. These columns showed a luminous efficacy of 40 lm/W in a not optimized laboratory sample.

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