Diagnostics in the ns-Range of High Pressure Spark Plasmas

H. Albrecht, R. Maly, B. Saggau and E. Wagner

Spark plasmas in N_2, air and combustibles at pressures of up to 6 bar have been investigated in detail by short time spectroscopy for 1100 Å $\leq \lambda \leq$ 7000 Å and $o \leq t \leq 100$ ns from spark onset. Very high carrier densities and ionization degrees are observed. In the vaccum-uv region strong emission from higher order ions and apprecable continuum radiation are found. The analysis shows that thermalization is established not later than about 50 ns from spark onset. These extreme plasma conditions strongly indicate efficient triggering of chemical reactions already at a very early stage of the spark discharge.

Dr. H. Albrecht
Institut für Physikalische Elektronik
Universität Stuttgart
D-7000 Stuttgart / Germany
Böblinger Str. 70