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Disciplina	530.44
Soggetti	Plasma (Ionized gases) Engineering—Materials Physical measurements Measurement Thermodynamics Heat engineering Heat - Transmission Mass transfer Chemical engineering Plasma Physics Materials Engineering Measurement Science and Instrumentation Engineering Thermodynamics, Heat and Mass Transfer Industrial Chemistry/Chemical Engineering
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Nota di contenuto	Introduction -- Test Benches of the IEE RAS' Pulsed Plasma Generators -- Pulsed Plasma Generators -- Parameters of the Arc -- Erosion of Electrodes -- Oscillations of Arc' s Diameter -- Processes and Heat Transfer in Electrodischarge Chamber -- Modes of Arcing -- Arc Contraction. Modified Current of Piza-Braginskii -- Arc at Ultrahigh Pressure -- Energy Features of Plasma Generator -- Applications of Pulsed Plasma Generators.

Sommario/riassunto

This book presents experimental and theoretical results on extremely powerful plasma generators. It addresses pulsed electrical mega-ampere arcs and the mechanisms of energy transfer from the arc into hydrogen, helium and air under pressures up to 250 MPa and currents up to 2 MA. Extreme plasma parameters and increased energy density in the arc were achieved. It was found experimentally that increasing the initial gas pressure to hundreds of MPa leads to improved arc stability, high efficiency of energy transfer from arc to gas, and plasma enthalpy growth. The data obtained data provides the basis for the development of electrophysical devices with high energy density, e.g. high intensity sources for visible, UV and X-ray irradiation for laser pumping, generators of high enthalpy plasma jets, and plasma chemical reactors.