

OCTIV [Mono™, Poly™, Suite™]

The Impedans' Octiv VI probe range are high accuracy RF power and impedance meters, but also have some powerful applications for plasma monitoring. This list contains published examples of ion flux monitoring, plasma characterization, match box development and other advanced applications of the Octiv sensors.



Plasma Source	Frequency	Gas	Application	Published Paper
Atomiser (TSI Aerisol Generator Model 3076)	13.56 MHz	Ar, Sea Salt (Na Cl SO ₄ Mg K Ca), Salt (NaCl) & Magnesium Sulfate (Mg SO ₄)	Power	Characterization of particle charging in low-temperature, atmospheric-pressure, flow-through plasmas
CCP	13.56 MHz	1- propanol, Propionic Acid, Allyl Alcohol, Acrylic Acid	Power, Ion flux	Defining Plasma Polymerization: New Insight Into What We Should Be Measuring
CCP	13.56 MHz	(Propionic, Acrylic) Acids, (Diethylene, Diethylene Divinyl ether) Glymes, (n-hexane and 1,7-octadiene) Hydrocarbons (n-hexane and 1,7-octadiene) Hydrocarbons	Ion flux, bias voltage	The link between mechanisms of deposition and the physico-chemical properties of plasma polymer film
CCP	13.56 MHz	Argon, Oxygen, Allylamine, Heptylamine, HMDSO, Diglyme, Acrylic Acid, Proponic Acid	Power, Ion flux	An Experimental and Analytical Study of an Asymmetric Capacitively Coupled Plasma Used for Plasma Polymerization
CCP	13.56 MHz	Digylme, Triglyme, DEGDVE	Power, Ion flux	On the Effect of Monomer Chemistry on Growth Mechanisms of Nonfouling PEG-like Plasma Polymers
CCP	13.56 MHz	Ethyl Isobutyrate, Methyl Isobutyrate, Ethyl Trimethylacetate	Ion flux, ohmic current	Synthesis of highly functionalised plasma polymer films from protonated precursor ions via the plasma a-y transition
CCP	13.56 MHz	Y-terpinene	Ion flux	Structural Characterization of Y-Terpinene Thin Films Using Mass Spectroscopy and X-Ray Photoelectron Spectroscopy
CCP	13.56 MHz	Triethyl Phosphate	Ion flux	The chemistry of organophosphate thin film coatings from low pressure plasma and the effect of the substrate on adhesion
CCP	13.56 MHz	Furfuryl Metjacrylate	Ion flux	Continuous Wave RF Plasma Polymerization of Furfuryl Methacrylate: Correlation Between Plasma and Surface Chemistry
CCP	13.56 MHz	AA, EDA	Ion flux	Plasma Parameter Aspects in the Fabrication of Stable Amine Functionalized Plasma Polymer Films
CCP	13.56 MHz	Ethanol	Power	A Mechanistic Study of the Plasma Polymerization of Ethanol
CCP	13.56 MHz	Ar	Voltage	Experimental investigations of the magnetic asymmetry effect in capacitively coupled radio frequency plasmas
CCP	13.56 MHz	Ethyl a-bromoisobutyrate	Ion flux	Hyperthermal Intact Molecular Ions Play Key Role in Retention of ATRP Surface Initiation Capability of Plasma Polymer Films from Ethyl a-Bromoisobutyrate
CCP	13.56 MHz	Ethanol	Ion flux	Comparison of Plasma Polymerization under Collisional and Collision-Less Pressure Regimes
CCP	13.56 MHz	H ₂ , SiF ₄ , Ar	Power	Microcrystalline silicon deposited from SiF₄/H₂/Ar plasmas and its application to photovoltaics

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CCP	13.56 MHz	Ar	Voltage, Current , Phase , Power	Dust particles suspended in an RF argon plasma in different apparent gravitational fields
CCP	13.56 MHz	ethyl trimethylacetate (CH ₃) ₃ CCOOC ₂ H ₅	Ion Flux	Plasma polymerization of (2,2,6,6-tetramethylpiperidin-1-yl)oxyl in a collisional, capacitively coupled radio frequency discharge
CCP	13.56 MHz	Sandalwood Oil	RF Power	Fabrication and characterization of biorenewable plasma polymer films using sandalwood oil precursor
CCP	13.56 MHz	Ar/O ₂	Voltage, Current	The Magnetic Asymmetry Effect in geometrically asymmetric capacitively coupled radio frequency discharges operated in Ar and O ₂
CCP	13.56 MHz	Ethanol (Plasma Polymerisation)	Ion Flux	Rational approaches for optimizing chemical functionality of plasma polymers: A case study with ethyl trimethylacetate
CCP	13.56 MHz	Ar, C ₄ F ₈ /Ar, and C ₄ F ₆ /Ar	Voltage, Current and Power	"Ion and Radical Characteristics (Mass/Energy Distribution) of a Capacitively Coupled Plasma Source Using Plasma Process Gases (C _x F _y)"
CCP	13.56 MHz	terpinen-4-ol and M. alternifolia oil plasma	RF power	"Comparative Study of Natural Terpenoid Precursors in Reactive Plasmas for Thin Film Deposition"
CCP	13.56 MHz	Ar/hexamethyldisiloxane	Voltage, current and phase angle	Characterization of dust synthesis in a low-pressure radio-frequency argon/hexamethyldisiloxane discharge using Microwave Cavity Resonance Spectroscopy
CCP, ICP (Oxford Plasmalab 80)	13.56 MHz	Ar, Xe, Kr	Voltage, Current	Neutral Beam Etching
CCP (Oxford Plasmalab 100)	13.56 MHz	Ar, O ₂	Voltage, Current	Investigation of the electron kinetics in O ₂ capacitively coupled plasma with the use of a Langmuir probe
CCP (Oxford Plasmalab 100)	13.56 MHz	O ₂	Current	Remote sensing of a low pressure plasma in the radio near field
CCP (Oxford Plasmalab 100)	13.56 MHz	SF ₆ , O ₂ , Ar	Phase , Current , Voltage	Experimental investigation of atomic fluorine and oxygen densities in plasma etch processes
CCP (Oxford Plasmalab 100)	13.56 MHz	O ₂	Phase	Experimental investigation of electron heating modes in capacitively coupled radio-frequency oxygen discharge
CCP (Oxford Plasmalab 100), Magnetron	13.56 MHz	Ar, Cu	Power	Electrical plasma diagnostics for the measurement of ion related parameters at the substrate surface
DBD	13.56 MHz	He, CO, CH, H ₂ O	Power	Wet Conversion of Methane and Carbon Dioxide in a DBD Reactor
Hollow Cathode	13.56 MHz	Ar, O ₂	Power , Impedance , Phase	Characterization of a radio frequency hollow electrode discharge at low gas pressures
Hollow Electrode Discharge	13.56 MHz	Ar	Voltage, Power	Modification of a metal nanoparticle beam by a hollow electrode discharge
ICIS	13.56 MHz	Ar, Ni, Cu, Ti	Voltage, Current, Phase, Impedance, Ion flux	Plasma analysis of inductively coupled impulse sputtering of Cu, Ti and Ni
ICP	13.56 MHz	Ar	Power	Nonlocal electron kinetics and spatial transport in radio-frequency two-chamber inductively coupled plasmas with argon discharges
ICP	2 MHz	H ₂	Power	Investigation of the power transfer efficiency in a radio-frequency driven negative hydrogen ion source
ICP	12.56 MHz	Ar, O ₂ , C ₄ F ₈ , CHF ₃ , C ₃ F ₇ OCH ₃	Bias Voltage	Plasma atomic layer etching of SiO ₂ and Si ₃ N ₄ with heptafluoropropyl methyl ether (C ₃ F ₇ OCH ₃)
ICP	13.56 MHz	N ₂ , O ₂ , H ₂ , FG, NH ₃	Impedance	Optimizing antenna voltage balancing for remote helical ICP plasma discharge using Oxygen, Hydrogen, Nitrogen, Ammonia and their mixtures : AEPM: Advanced Equipment Processes and Materials
ICP	13.56 MHz	Ar	Current , Power	INCA – Inductively coupled array discharge
ICP	13.56 MHz	Ar	Reflected Power	Characteristics of ICP and helicon plasma in a single loop antenna
ICP	13.56 MHz	Ar, Ne	Current	Inductively coupled array (INCA) discharge
ICP	13.56 MHz	He/CH ₄	Delivered Power	Detecting trace methane levels with plasma optical emission spectroscopy and supervised machine learning

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ICP	13.56 MHz	2,2,6,6-Tetramethylpiperidin-1-yl oxyl (TEMPO) ((CH ₂) ₃ (CMe ₂) ₂ NO)	Power	Plasma polymerization of (2,2,6,6-tetramethylpiperidin-1-yl)oxyl in a collisional, capacitively coupled radio frequency discharge
ICP	13.56 MHz	N ₂	Voltage, Current and Phase	Comprehensive Data Collection Device for Plasma Equipment Intelligence Studies
ICP	13.56 MHz	CF ₄ /O ₂	Bias voltage	Etching characteristics of hydrogenated amorphous carbon with different sp ² /sp ³ hybridization ratios in CF ₄ /O ₂ plasmas
ICP	13.56MHz (Source), 12.56MHz (Bias)	C ₂ H ₂ , CF ₄ , O ₂	Bias voltage, Ion energy	"Ion-Enhanced Etching Characteristics of sp ² -Rich Hydrogenated Amorphous Carbons in CF ₄ Plasmas and O ₂ Plasmas"
ICP	13.56 MHz	Ar	RF Current	Microparticle charging in spatial plasma afterglows
ICP	13.56 MHz	N ₂	Harmonics, RF Power	Machine Learning Prediction of Electron Density and Temperature from Optical Emission Spectroscopy in Nitrogen Plasma
ICP (Oxford PlasmaLab80)	13.56 MHz	Ar, SF ₆	Power	Extraction and neutralization of positive and negative ions from a pulsed electronegative inductively coupled plasma
Ion Thruster	1.995 MHz	Iodine	FWD, REF Power, Impedance	Performance of a 4-cm iodine-fueled radio frequency ion thruster
Magnetron	13.56, 27.12, 60 MHz	Ar, Al, Cu, C, Si	Current, Voltage, Power, Impedance	Plasma Impedance Characteristics of Radio Frequency and Very High-Frequency Magnetron Discharges
Magnetron	2, 13.56 MHz	Ar, Ag, Si	Current, Voltage, Power, Impedance, Ion flux	Effect of radio-frequency substrate bias on ion properties and sputtering behavior of 2 MHz magnetron sputtering
Magnetron	13.56, 60 MHz	Ar, Si	Ion flux, Power, Current, Voltage, Impedance	Ion property and electrical characteristics of 60 MHz very-high-frequency magnetron discharge at low pressure
Magnetron	13.56 MHz, 27.12MHz, 60MHz	Ar	Discharge voltage, Power	Effect of gas pressure on ion energy at substrate side of Ag target radio-frequency and very-high-frequency magnetron sputtering discharge
Plasma Jet	13.56 MHz	He, O ₂ , N ₂	Power, Impedance	Power coupling and electrical characterization of a radio-frequency micro atmospheric pressure plasma jet
Pulsed ICP	13.56 MHz	Ar, CF ₄	Power	Complex transients of input power and electron density in pulsed inductively coupled discharges
Pulsed ICP	13.56 MHz	Ar and Ar/CF ₄	Instantaneous RF power	Spatio-temporal measurements of overshoot phenomenon in pulsed inductively coupled discharge
Pulsed ICP	13.56 MHz	Ar, O ₄	RF Power, Current, Voltage	Experimental and numerical investigations of the characteristics of electron density in O ₂ /Ar pulsed planar-coil-driven inductively coupled plasmas
Ring Electrode	13.56 MHz	He, Ne, H ₂ O	Current, Voltage, Phase	Controlled microdroplet transport in an atmospheric pressure microplasma
Ring Electrode	13.56 MHz	Ar, Carbon (dust)	Voltage, current for electron density	Understanding the depletion of electrons in dusty plasmas at atmospheric pressure
Thruster	13.338-14.238 MHz	Ar	Impedance, Voltage, Current	Low-Weight Fixed Ceramic Capacitor Impedance Matching System for an Electrothermal Plasma Microthruster
Thruster	13.56 MHz	Ar, N ₂ , H ₂ , CO ₂	Power Efficiency, Voltage Waveform Reconstruction	Pocket Rocket: An electrothermal plasma micro-thruster
Thruster	2 MHz	N/A	Power	Real-time in situ determination of inductively coupled power and numerical prediction of power distribution in RF ion thrusters
Thruster	2 MHz	Xe	Power, Current	Radio-Frequency Ion Thrusters, Power Measurement and Power Distribution Modeling
Thruster	1.1 , 1.6 MHz	Xe, I ₂ , Adamantane (C ₁₀ H ₁₆)	Power	Molecular propellants for ion thrusters
Thruster (Pocket Rocket)	13.56 MHz	Ar	Power	Supersonic Constricted Plasma Flows
Thruster (Pocket Rocket)	12.5 MHz	H ₂	Voltage, Phase, Impedance	Observations of a mode transition in a hydrogen hollow cathode discharge using phase resolved optical emission spectroscopy

*Click to read more about [Octiv Mono 2.0](#), [Octiv Poly 2.0](#) and [Octiv Suite 2.0](#).

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