

OCTIV APPLICATIONS LIST



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	Gases	Pressure	Published Paper
Plasma Source	Frequency	Gases	Application	Published Paper
Atmospheric pressure plasma jet	13.56 MHz	He	RF Power	Generation and delivery of free hydroxyl radicals using a remote plasma
Atomiser (TSI Aerisole 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	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	Diglyme, Triglyme, DEGDVE	Power, Ion flux	On the Effect of Monomer Chemistry on Growth
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 α-γ transition
CCP	13.56 MHz	γ -terpinene	Ion flux	Structural Characterization of γ-Terpinene Thin
CCP	13.56 MHz	Triethyl Phosphate	Ion flux	The chemistry of organophosphate thin film
CCP	13.56 MHz	Furfuryl Metjacrylate	Ion flux	Continuous-Wave RF Plasma Polymerization of
CCP	13.56 MHz	AA, EDA	Ion flux	Plasma Parameter Aspects in the Fabrication of
CCP	13.56 MHz	Ethanol	Power	A Mechanistic Study of the Plasma Polymerization
CCP	13.56 MHz	Ar	Voltage	Experimental investigations of the magnetic
CCP	13.56 MHz	Ethyl α -bromoisobutyrate	Ion flux	Hyperthermal Intact Molecular Ions Play Key Role in Retention of ATRP Surface Initiation Capability of Plasma Polymer Films from Ethyl α-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
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	Ethyltrimethylacetate (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	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

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CCP	3.56MHz	Ar/hexamethyldisiloxane	Voltage, current, power and phase angle	Characterization of cyclic dust growth in a low-pressure, radio-frequency driven argon-hexamethyldisiloxane plasma - IOPscience
CCP	13.56 MHz	Ar and HMDSO	Voltage, current, power and phase angle	A novel diagnostic for dust particle size in a low-pressure nanodusty plasma based on the decay of the electron density released by laser-induced photodetachment.
CCP	13.56 MHz	Ar and HMDSO	Voltage, current, power and phase	Real-time in situ monitoring of dust particle growth
CCP , ICP (Oxford Plasmalab 80)	13.56 MHz	Ar , Xe , Kr	Voltage , Current	Neutral Beam Etching
CCP (Oxford Plasmalab 100)	13.56 MHz	Ar , O2	Voltage, Current	Investigation of the electron kinetics in O2 capacitively coupled plasma with the use of a Langmuir probe
CCP (Oxford Plasmalab 100)	13.56 MHz	O2	Current	Remote sensing of a low pressure plasma in the radio near field
CCP (Oxford Plasmalab 100)	13.56 MHz	SF6 , O2 , Ar	Phase , Current , Voltage	Experimental investigation of atomic fluorine and oxygen densities in plasma etch processes
CCP (Oxford Plasmalab 100)	13.56 MHz	O2	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 , CO2 , CH4 , H2O	Power	Wet Conversion of Methane and Carbon Dioxide in a DBD Reactor
Hollow Cathode	13.56 MHz	Ar , O2	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	H2	Power	Investigation of the power transfer efficiency in a radio-frequency driven negative hydrogen ion source
ICP	12.56 MHz	Ar , O2 , C4F8 , CHF3 , C3F7OCH3	Bias Voltage	Plasma atomic layer etching of SiO2 and Si3N4 with heptafluoropropyl methyl ether (C3F7OCH3)
ICP	13.56 MHz	N2 , O2 , H2 , FG , NH3	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/CH4	Delivered Power	Detecting trace methane levels with plasma optical emission spectroscopy and supervised machine learning
ICP	13.56 MHz	2,2,6,6-Tetramethylpiperidin-1-yl oxyl (TEMPO) ((CH2)3(CMe)2NO	Power	Plasma polymerization of (2,2,6,6-tetramethylpiperidin-1-yl)oxyl in a collisional, capacitively coupled radio frequency discharge
ICP	13.56 MHz	N2	Voltage, current and phase	Comprehensive Data Collection Device for Plasma Equipment Intelligence Studies
ICP	13.56 MHz	CF4/O2	Bias Voltage	Etching characteristics of hydrogenated amorphous carbon with different sp2/sp3 hybridization ratios in CF4/O2 plasmas
ICP	13.56 MHz	C2H2/CF4/O2	Bias voltage, ion energy	Ion-Enhanced Etching Characteristics of sp2-Rich Hydrogenated Amorphous Carbons in CF4 Plasmas and O2 Plasmas
ICP	13.56 MHz	Ar	RF current	Microparticle charging in spatial plasma afterglows
ICP	13.56 MHz	N2	Harmonics, RF Power	Machine Learning Prediction of Electron Density and Temperature from Optical Emission Spectroscopy in Nitrogen Plasma
ICP	13.56 MHz	CF4	RF Power	Surface wettability control and fluorination modeling of amorphous carbon films fluorinated with CF4 plasma
ICP/ALE	13.56 MHz	C4H3F7O, Ar	Bias voltage	Plasma Atomic Layer Etching of SiO2 and Si3N4 with Low Global Warming C4H3F7O Isomers
ICP/ALE	13.56 MHz	CHF3 or C4F8, Ar	Bias voltage	Plasma atomic layer etching of molybdenum with surface fluorination
ICP/ALE	13.56 MHz	C5F10O, C4F8	Bias Voltage	Low global warming C5F10O isomers for plasma atomic layer etching and reactive ion etching of SiO2 and Si3N4

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ICP (Oxford PlasmaLab80)	13.56 MHz	Ar , SF6	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 Sputtering	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
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 Sputtering	13.56MHz	Ar	RF Voltage	Electron dynamics in planar radio frequency magnetron plasmas: III. Comparison of
Plasma Jet	13.56 MHz	He , O2 , N2	Power, Impedance	Power coupling and electrical characterization of a radio-frequency micro atmospheric pressure
Plasma jet	13.56MHz	Ar	RF power, Current, Voltage	Charge decay in the spatial afterglow of plasmas and its impact on diffusion regimes
Plasma jet	13.56 MHz	He	RF Power	Generation and delivery of free hydroxyl radicals using a remote plasma
Pulsed ICP	13.56MHz	Ar and Ar/CF4	Instantaneous RF power	Spatio-temporal measurements of overshoot phenomenon in pulsed inductively coupled discharge
Pulsed ICP	13.56MHz	O2/Ar	RF Power, Current, Voltage	Experimental and numerical investigations of the characteristics of electron density in O2/Ar pulsed planar-coil-driven inductively coupled plasmas
Pulsed ICP	13.56 MHz	Ar , CF4	Power	Complex transients of input power and electron density in pulsed inductively coupled discharges
Ring Electrode	13.56 MHz	He , Ne , H2O	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
RF Reactor/ALINE	25 MHz	He	RF Voltage and current	Positive self-bias in a magnetized CCP discharge
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 , N2 , H2 , CO2	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 predication of power
Thruster	2 MHz	Xe	Power, Current	Radio-Frequency Ion Thrusters—Power Measurement and Power Distribution Modeling
Thruster	1.1 , 1.6 MHz	Xe , I2 , Adamantane (C10H16)	Power	Molecular propellants for ion thrusters
Thruster (Pocket Rocket)	13.56 MHz	Ar	Power	Supersonic Constricted Plasma Flows
Thruster (Pocket Rocket)	12.5 MHz	H2	Voltage, Phase, Impedance	Observations of a mode transition in a hydrogen hollow cathode discharge using phase resolved optical emission spectroscopy

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