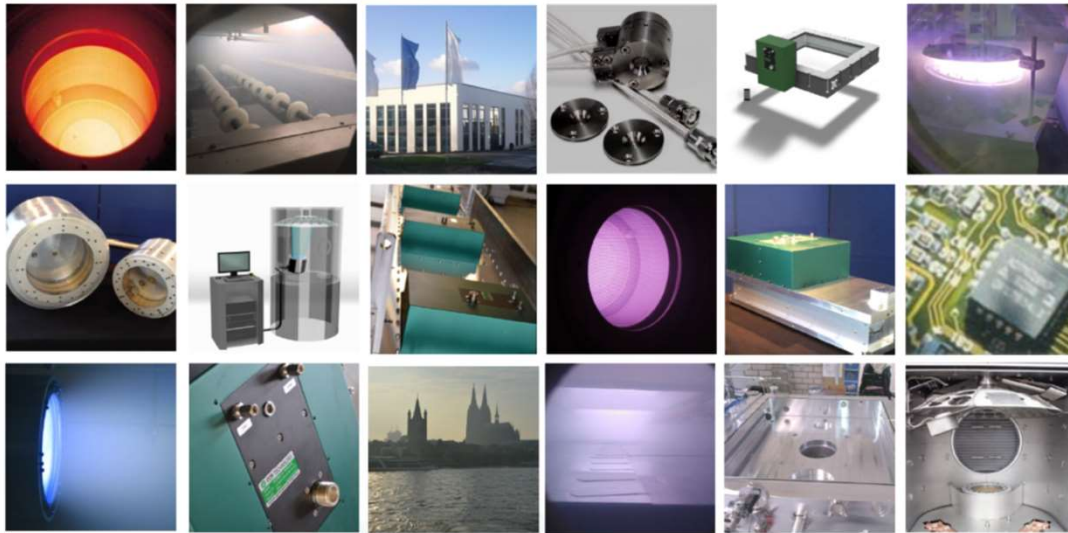


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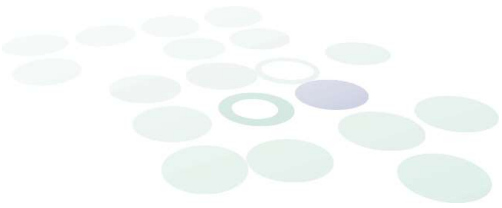
CCR PVD Assist Plasma Source Solutions



Event: Baltic Photonics 2019, Vilnius

Presenter: Ignazio Ciccomascolo

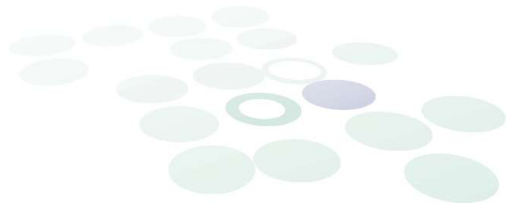
Date: 09th of October 2019



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Agenda

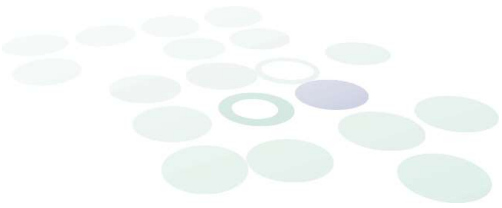
- i. About CCR Technology**
- ii. Technical Basics of the COPRA Plasma Source**
 - i. main benefits for PVD Assist
- iii. Different machine designs**
 - i. Sputter Assist (PARMS)
 - i. Turn-table coating system
 - ii. Drum-coating systems
 - ii. IBAD
 - i. Example IZOVAC
- iv. Questions**



About CCR

- established in the 90's
- located in Troisdorf nearby cologne
- developer of ICP sources and solutions
- more than 70 different variants of COPRA Sources
- meanwhile approx. 1000 sources shipped in over 40 countries
- more than 3/4 of them in industrial production





CCR Technology

Technical Basics of the COPRA Plasma Technology®

Technology: ICP inductive coupled plasma

Frequency: 13.56 MHz RF

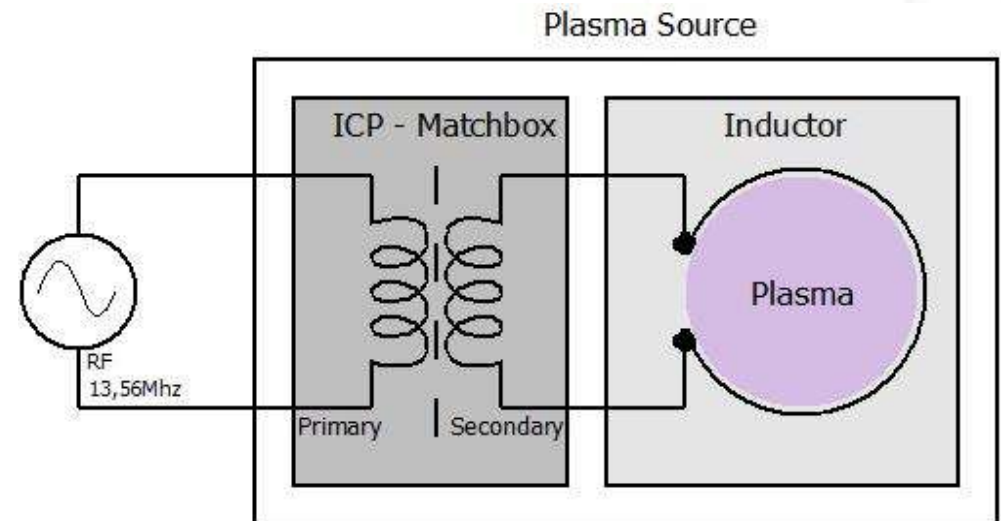
Power: 0.1 to 15 kW

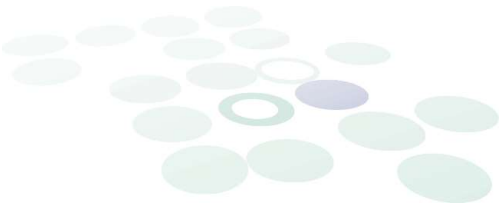
Impedance: 50 Ohm

Matching: “always Integrated Remote Matchbox”

Gas Pressure: 1E-4 mbar to 1E-1 mbar

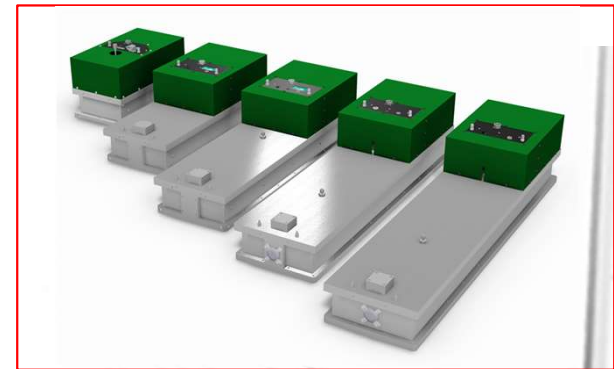
Gas: almost any



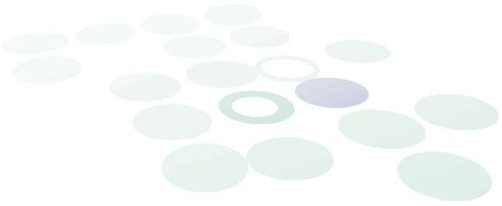


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COPRA® RF-ICP-Plasma Solutions



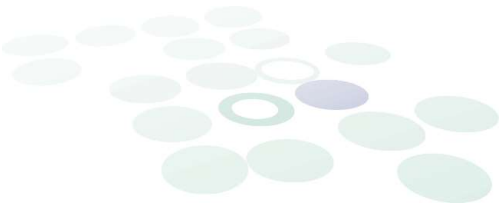
- Competitive, industrial coating solutions
- easy to install (**Matchbox integrated**), scale and reliable performing



CCR Technology

Typical Applications

- PVD-Assist (magnetron sputter assist)
 - cleaning
 - activation
 - oxidation
 - metal oxides, AR-coatings, band-pass-filter, decorative coatings, etc.
 - nitriding
 - densification
- etching (chemical + physical etching, soft etching)

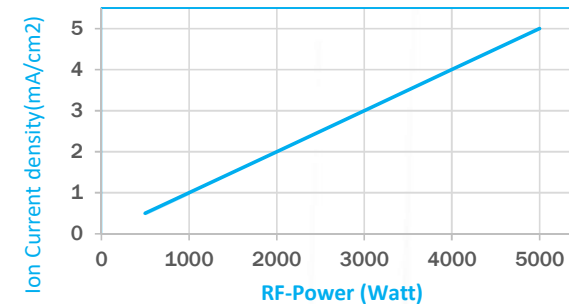


CCR Technology

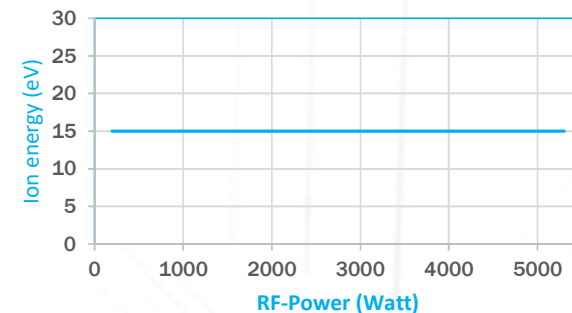
Main benefits of CCR COPRA ICP sources

- Optimum operation in the same working pressure level like sputtering
- independent ion-current-density (ICD) control from ion-energy
- the COPRA Plasma Sources can work directly with nearly any gases as also pure gas types as well as gas mixtures. No operation gas is needed.
- Even pure **H₂ & SF₆ Plasma** can be generated easily

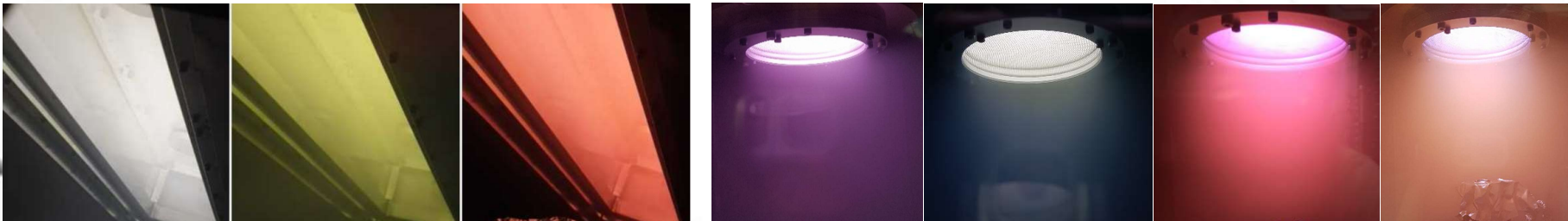
Ion Current Density vs. RF-Power

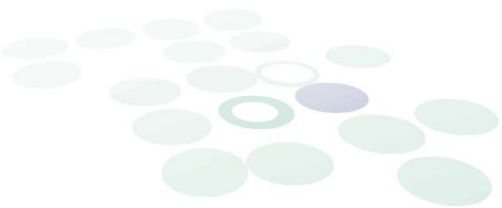


Ion energy vs. RF-Power



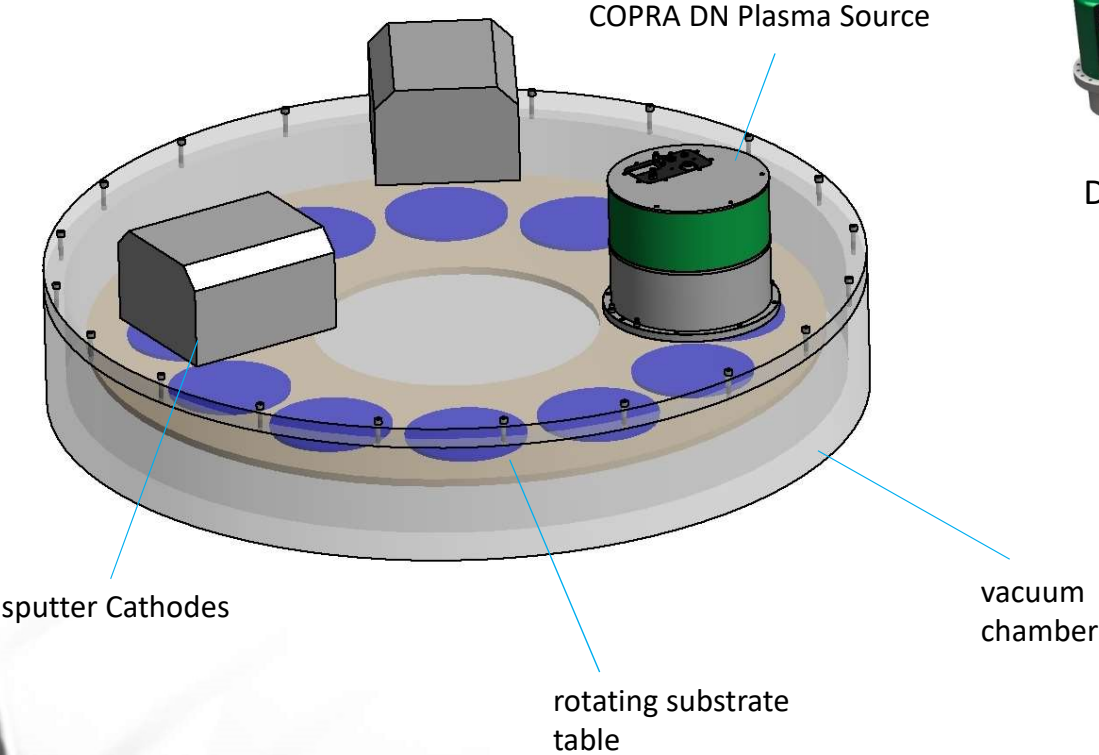
Examples for different gas configurations: O₂, N₂, Ar, **H₂** & gas mixtures...





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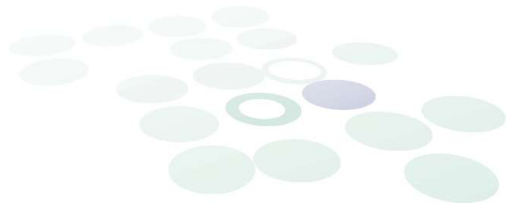
Turntable sputter coating-systems



DN160; DN200; DN250

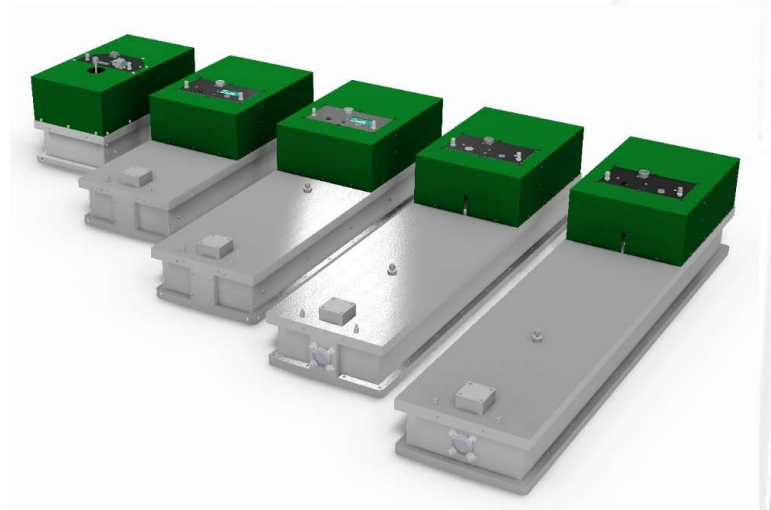
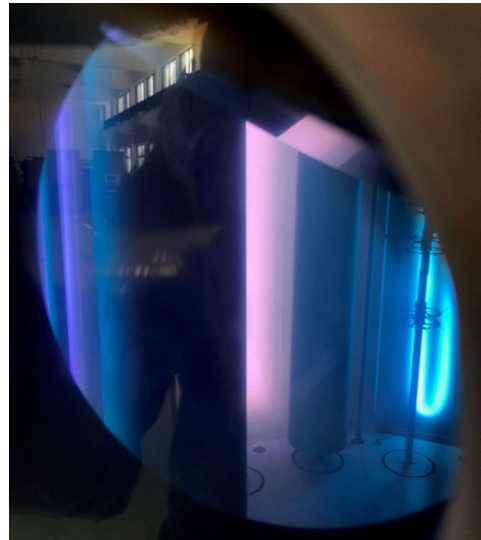
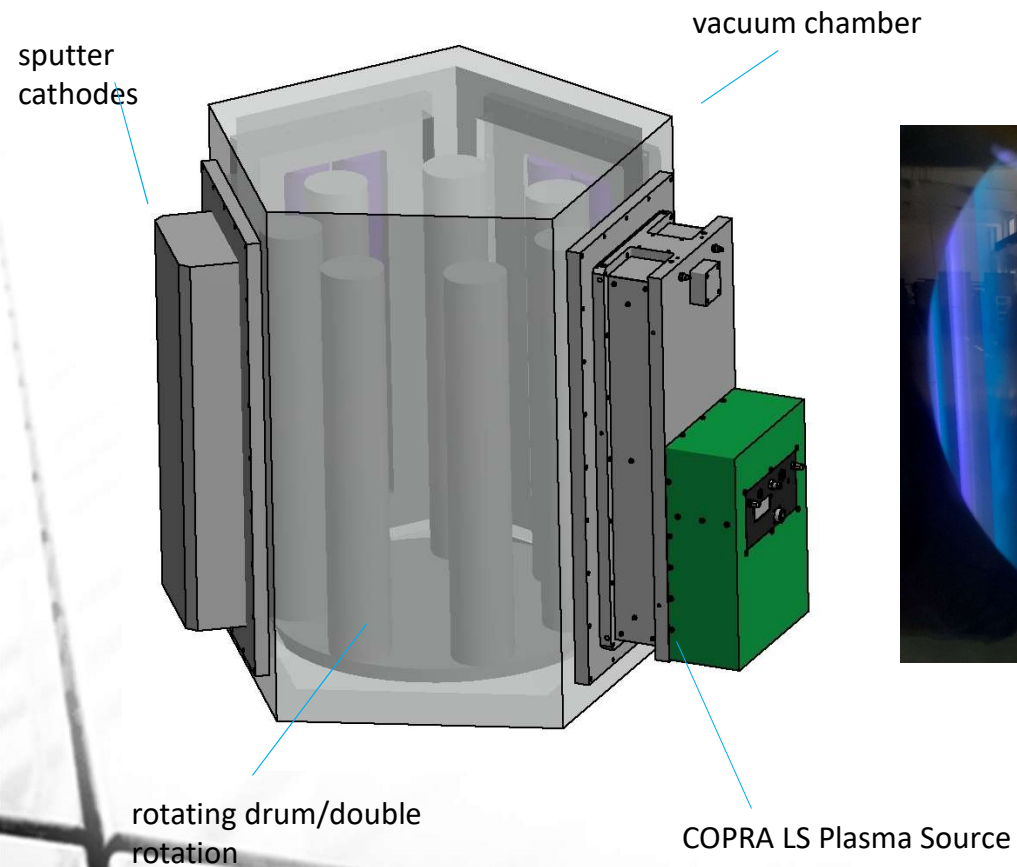
DN251; DN401; DN501



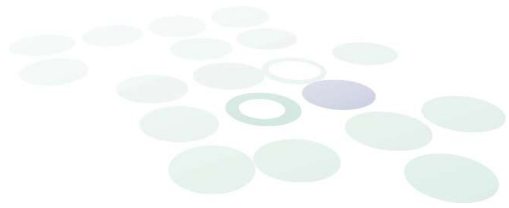


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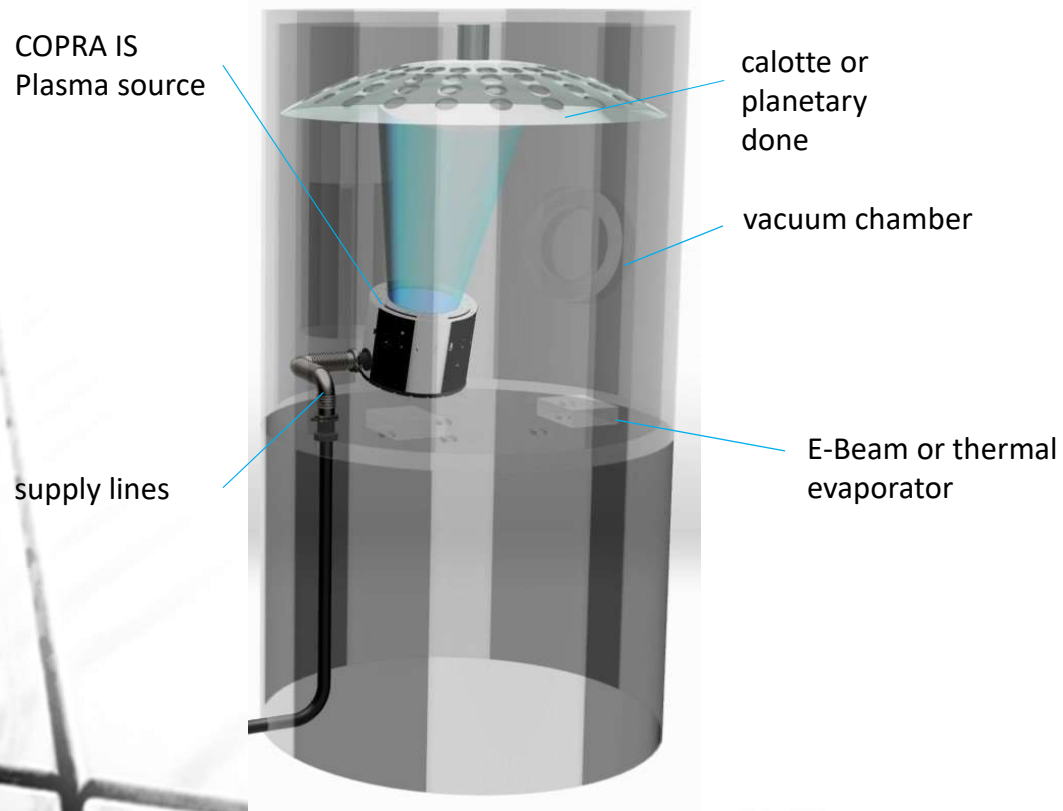
Drum coating sputter-systems



LS358x156; LS1600x201



IBAD (E-Beam Assist)



CCR PVD-Assist Plasma Source Solutions - Baltic Photonics 2019

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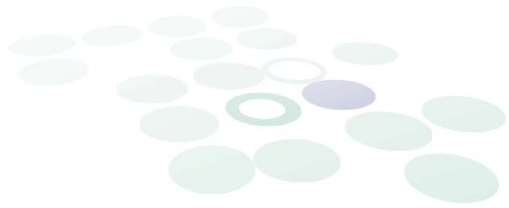


IS200.....IS501



10.10.2019

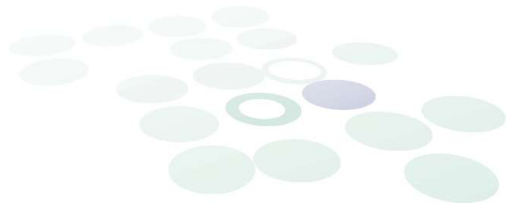
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CCR Technology

Example IZOVAC Ortus





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www.ccrtechnology.de

Thank you very much for
your kind attention!