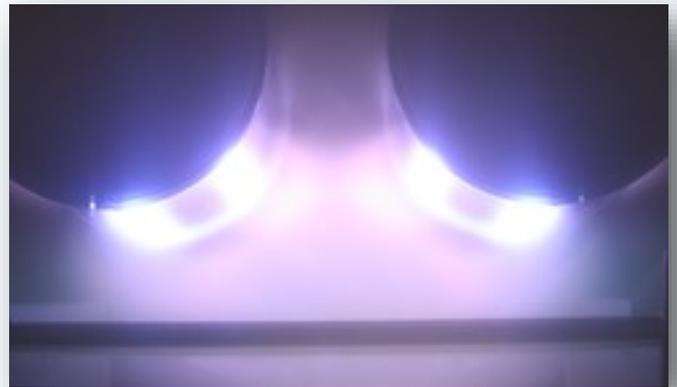


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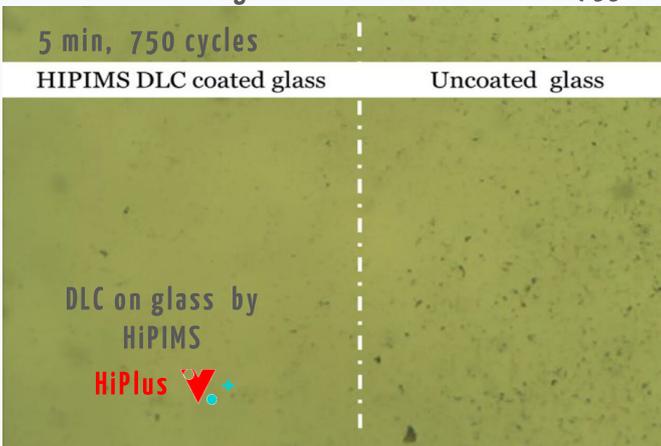
We want our customers to share our **excitement** of improving the **performance** and quality of their processes and products by developing advanced deposition techniques beyond the current **state of the art**.

Your R&D Partner for plasma technology development

Nano4Energy's devotion to development of plasma technology has led to significant improvements of coating properties as well as productivity in every day manufacturing. Due to the development of power supplies we have the possibility to tailor the whole process to optimize every parameter. The knowledge has been implemented in several industrial systems that are in the market today.



Oscillating sand abrasion test ASTM F735



HiPIMS HiPlus technology & DLC on glass and plastics

The HiPIMS **HiPlus** function is a great example that have led to improvements in both properties and deposition rates; boosting the **HiPIMS** technology in industrial applications. **Exceptional adhesion** and smoothness with deposition at low temperature on both conducting and **insulating substrates**.

The results have been proven successful on both mobile screens, polycarbonate solar roofs and high volume roll-to-roll plastics. The DLC have shown higher density higher hardness and increased durability as well as increased production speed.

State of the art DLC recipes implemented in commercially available industrial coating systems

We work closely with our customers in order to implement the latest technology of thin film coatings to every day production. Nano4Energy have implemented several of the DLC recipes in a high quality purpose designed manufacturing tool, manufactured by PVT, the **xPro4C**, ready for automatic high volume production.



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The industrial HiPIMS choice!

The power of reliability!

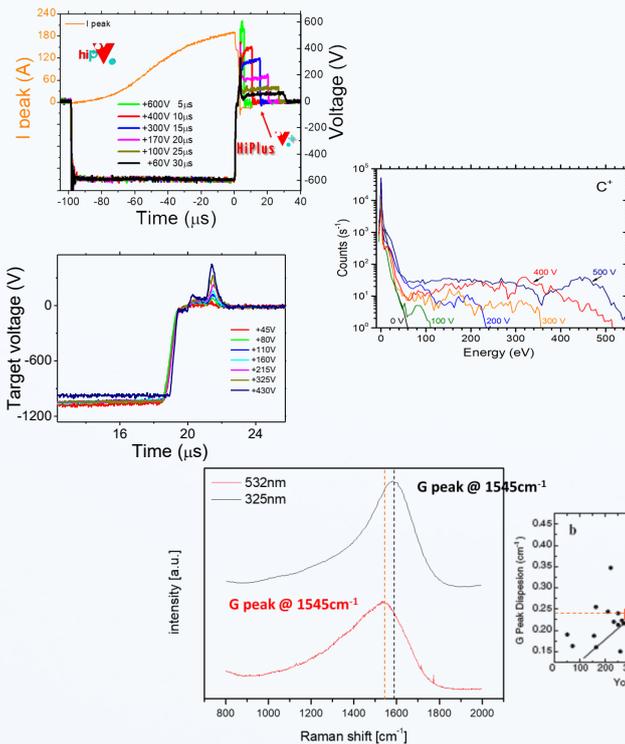


- FLEXIBLE
- RELIABLE
- MODULAR
- MULTI-FUNCTIONAL
- ROBUST



- HiPIMS-PS
- DC-PS
- HiPIMS Synchronized Bias / DC-Bias
- HiPIMS AC Dual magnetron
- HiPlus Voltage reversal technology

State of the art DLC coatings using HiPIMS technology with HiPlus



By depositing DLC coatings by using HiPIMS with the HiPlus technology it is possible to enhance the ionization of both the sputtered carbon and argon species. The ion bombardment induced by the positive pulses results in higher compressive residual stresses and densification of deposited DLC coatings as well as a higher sp³ ratio improving the mechanical properties of the DLC.

DLCs hardness and elastic modulus are enhanced when higher pulse voltages (> 300 V) are applied. The increased presence of highly energetic C⁺ ions is fundamental for the improvement of mechanical properties of the DLCs, which are denser and present a more ordered structure. The application of positive pulses is not only limited to carbon plasmas but can also offer great benefits for optimizing other coatings systems like hard carbides and nitrides.

