

# Plasma behavior in pulsed magnetron and new trends for plasma excitation

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High-Power Impulse Magnetron Sputtering (HiPIMS) is a mature technology that has been effectively transferred to the industry. Since its early stage at the end of the previous century, the understanding of HiPIMS plasma behavior has significantly advanced [1].

The first part of the talk will present a review of HiPIMS plasma physics as it emerges from the modeling backed by the experimental results. Both reactive and non-reactive cases will be treated.

In the second part, several novel ways to excite the plasma (multi-pulse, e-HiPIMS (Electron enhanced – HiPIMS) [2], and Hyper-Power Impulse Magnetron – HyPIM [3,4]), together with their specific parameters, will be introduced, essentially for the plasma species facing the substrate. This key information is of major importance for controlling thin film properties.

Throughout several examples (5-7), we will show how to tailor ultra-thin films, taking the benefit of mastering the HiPIMS technology.

## References

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