



**PPPS2025**  
Pulsed Power & Plasma Science Conference



June 15<sup>th</sup>– 20<sup>th</sup>, Berlin



## **2<sup>nd</sup> IEEE Workshop on Pulsed Power for Fusion Applications** **Berlin, Germany, June 18, 2025**

<https://www.ppps2025.kit.edu/index.php>

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The 2025 IEEE International Pulsed Power and Plasma Science Conference (PPPS) is pleased to host the **2<sup>nd</sup> IEEE Workshop on Pulsed Power for Fusion Applications**. The workshop will focus on identifying insulation and technology gaps for pulsed power drivers for laboratory, prototype and power plant applications. The goal of this 2<sup>nd</sup> workshop is to identify new dielectric and insulation technologies, as well as models that will result in reduced cost, and reduced volume drivers. The workshop will focus on high current, energy storage needs for pulsed power drivers with that can supply 500 kA-60 MA currents, with pulse widths in the 50 ns-10  $\mu$ s regime at voltages from 100 kV-10 MV. Repetitive operation of components in the 0.1 pps-100 pps are of interest with requisite lifetimes of 1 million pulses to over a billion pulses. These requirements encompass laser driven fusion applications, Z Pinch and Z-like or MagLiF fusion target requirements.

The 2<sup>nd</sup> international workshop will showcase three plenary talks that give an overview of the Fusion industry in Asia, Europe and the USA. The workshop will be supported by additional fusion related sessions at the 2025 IEEE PPPS. The workshop sessions will focus on gas, liquid and solid dielectrics. Advanced concepts and technologies for self-assembly of solid dielectrics and additives that increase the hold off field in the dielectrics are also requested. Presentations on advanced modeling of breakdown mechanisms in the dielectrics that predict lifetime, replacements for liquid and solid dielectrics that can withstand much higher electric fields, and operate at higher energy densities than presently available are of interest. As an outgrowth of this discussion and input from the workshop attendees, a paper for dielectric development for the pulsed power and high voltage community will be documented and disseminated to the attendees and interested government agencies.

The workshop is soliciting oral and poster presentations and general conference presentations from fusion companies, industry, academia and government agencies which address their pulsed power needs, and the technology gaps for reducing the cost of pulsed power drivers, and systems. Inclusive to this call is a roadmap or pathway for the development of long lifetime energy storage technologies that extend the lifetime of existing systems. Advanced predictive models to address dielectric reliability and maintenance during operation is also of interest to the call for papers and oral presentations. This includes advanced diagnostics.

The workshop will culminate with an attendee and speaker discussion. As an outgrowth of the discussion the co-chairs will document the discussions and community requirements that will impact the needs of the Pulsed Power fusion community for future development of new components and high current pulsed power systems.

Participation in the workshop is free, but it requires the 2025 IEEE PPPS conference registration. Early registration for the conference and workshop is encouraged. All abstract submissions for the workshop should be marked at the bottom of the abstract with a sentence “*Requesting a poster or oral session at the IEEE Workshop on Pulsed Power for Fusion Application.*”

The 2025 IEEE PPPS technical area chair for Fusion and HED applications is Randy Curry who can be reached at [curryhv@ieee.org](mailto:curryhv@ieee.org).