

## **IET International Travel Award Report**

In April 2025, I had the privilege of delivering an oral presentation at the Plasma Processing and Technology International Conference, held in Albufeira/Algarve, Portugal. My presentation, titled “Atmospheric Pressure Microplasma for Gold Nanoparticle/VOx Nanocomposites,” showcased recent advances in the controlled synthesis of functional nanomaterials using microplasma technology. This conference, which brings together leading experts in plasma science, surface engineering, and nanotechnology, provided a dynamic platform to present my research, engage with fellow scientists, and explore cutting-edge developments in plasma-assisted processes.

The Plasma Processing and Technology International Conference is a prominent global forum in the field of plasma-based material synthesis, modification, and diagnostics. It brings together researchers, engineers, and industry leaders to discuss innovations in plasma applications across materials science, catalysis, electronics, and biomedical engineering. The collaborative environment fostered at this event made it an exceptional opportunity for knowledge exchange and scientific networking.

My participation centered on presenting a study exploring the synthesis of gold nanoparticle/vanadium oxide (VOx) nanocomposites via atmospheric pressure microplasma, a technique that offers several advantages over conventional methods, including low-temperature processing, environmental friendliness, and fine control over nanostructure formation. The research demonstrated successful, uniform deposition of gold nanoparticles onto VOx substrates, enabling the development of nanocomposites with potential applications in catalysis, sensing, and energy devices.

The conference featured a wide range of technical sessions focusing on low-temperature plasma processes, plasma diagnostics, nanomaterials engineering, and industrial plasma applications. My work aligned closely with the conference's emphasis on the integration of atmospheric pressure plasma in nanomaterial synthesis and functionalization. In my talk, I addressed how plasma parameters—such as discharge power, voltage, and gas composition—affect the morphology and properties of the resulting nanostructures, and I presented data on the enhanced electrochemical

and catalytic properties of the synthesized nanocomposites. As an oral presenter, I had the opportunity to share my research findings with an audience of experts and receive valuable feedback.

Beyond my own presentation, I attended several sessions on the frontiers of plasma-assisted synthesis, nanostructure control, green chemistry, and microreactor development. These talks enriched my understanding of current trends and inspired new directions for integrating plasma processes with energy and environmental technologies.

One of the most rewarding aspects of attending this conference was the opportunity to network with professionals working in nanotechnology, plasma science, and materials engineering. I had numerous conversations that may lead to future collaborations, particularly around the scaling and industrial translation of atmospheric pressure microplasma platforms. The event's networking activities provided a vital interface with both academic researchers and industry stakeholders, offering insights into commercialization strategies and real-world impact.

I was honored to attend this event with the support of the IET International Travel Award 2025, which played a crucial role in making this experience possible. The award allowed me to present my work to a global audience, receive constructive critique, and incorporate new insights into my ongoing projects. Exposure to the latest developments in plasma technology and nanocomposite research has had a tangible impact on my work, especially in optimizing microplasma integration in materials synthesis.

In summary, attending the 2025 Plasma Processing and Technology International Conference and presenting my research on atmospheric pressure microplasma for nanocomposites was an immensely valuable experience. The conference provided a prestigious platform to share findings, build professional connections, and advance my knowledge in a fast-evolving field. The support of the IET Travel Award greatly enhanced the impact of this experience, helping to drive forward my research and expand my engagement with the global scientific community.