

Toxic Free Metallization process for plastic surfaces

9th Press Release SSbD Workshop on Sustainable Metallization Technologies for Plastics

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The workshop was organized by Gruppo Gaser at its Tech Lab located within the Kilometro Rosso Innovation District and was conducted by the Head of R&D, Mirco Valsecchi.

The event was designed to present the two innovative and sustainable technologies developed within the FreeMe project for the metallization of plastic substrates, aiming to eliminate the use of hazardous substances such as hexavalent chromium and palladium, which are commonly employed in conventional Plating on Plastics (PoP) processes.

The event provided both a technical and practical overview of next generation approaches for

achieving functional metallization in a more environmentally responsible way, in line with Safe and Sustainable by Design (SSbD) principles.



In particular, the first part of the workshop focused on an innovative immersion based process, including sustainable etching and activation steps.

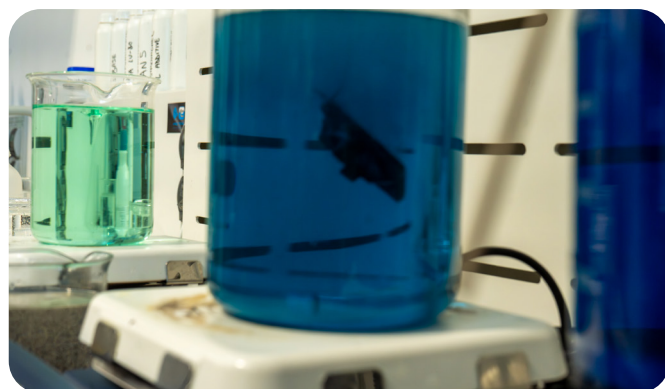


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This approach was demonstrated at laboratory scale on ABS plastic test plaques, allowing participants to directly observe the process sequence and the resulting metallized surfaces.

The demonstration highlighted the feasibility of achieving high-quality metallization without relying on conventional toxic or critical chemical routes.



In addition, the workshop addressed the key limitations and critical challenges associated with scaling this laboratory process to an industrial production environment. Topics such as process robustness, bath stability, adhesion consistency, and industrial integration were discussed in detail, emphasizing the gap between lab-scale validation and full-scale manufacturing implementation.



A complementary contribution was provided by the Politecnico di Milano, which presented a parallel approach based on sprayable resin systems for plastic metallization. The presentation focused on the same central challenge of the project:



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the scalability of innovative, Cr(VI) and Pd-free processes, highlighting both the potential and the current technical barriers of this alternative route.

Overall, the workshop fostered a constructive exchange between academic and industrial partners, underlining the shared effort within the FreeMe project to develop sustainable, scalable, and industry-ready metallization technologies for plastics. Interviews were also conducted during

the workshop with industrial partners, and these are available in the latest video published on the FreeMe YouTube channel.



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