Expression of interest

Contact details

Country	TURKEY
Name of the organisation	Sabanci University (SU)
Name of the contact	Burcu Simsek
Phone	+90 216 568 7071
Email	burcu.simsek@sabanciuniv.edu

Short description of the organisation

Our organization is equipped with cutting-edge infrastructure, comprising of multiple vacuum systems that are optimized for organic thin film growth with in-situ characterization capabilities. The characterization laboratory is fully equipped with the most advanced surface and thin-film characterization equipment, ensuring that the highest level of detail can be attained during post-deposition analyses, leading to a better understanding of the film properties.

Leading the research is an experienced scientist with over a decade of expertise in surface modification techniques and organic thin film deposition. Furthermore, the researcher has a successful track record in designing and constructing custom vacuum systems for surface processing applications, enabling the implementation of unique and innovative processing techniques.

Specific skills related to the project

« HORIZON-CL4-2023-DIGITAL-EMERGING-01-11: Low TRL research in micro-electronics and integration technologies for industrial solutions (RIA) »

We have extensive experience on design and fabrication of flexible substrates with organic coatings custom designed for applications. We can contribute to this call by providing our expertise in designing and producing new coatings for improved performance of the micro-nanoelectronic systems. We can tune the functionalities of the organic coatings as adhesion promoters between organic and inorganic layers of the systems. We also develop dielectric coatings for encapsulation of the devices with high aspect ratio patterns.

Proposed activities for the project

One of the major challenges in micro-nanoelectronic systems is the delamination of layers resulting in poor performance of the device. Development of adhesion layers using processing tools compatible with the device manufacturing process is critical in addressing this challenge.

In this project we propose to design adhesion promoting layers and implement these layers on the systems using new vapor based processing tools. Furthermore, we aim to design these new tools to provide the encapsulation layers on patterned substrates of the devices.

References

Articles:

- O. Mohammadmoradi, G. Ozaydin Ince (2022) "Encapsulation of interdigitated electrodes by PTFE coatings via closed batch initiated chemical vapor deposition", Vacuum 195, 110691.

- O. Mohammadmoradi, U. Celik, B. Mısırlıoğlu, G. Ozaydin Ince (2021) "Vapor phase synthesis of ferroelectric microislands on PVDF thin films", Nanotechnology 32, 435601.

- G. Ozaydin-Ince, A. M. Coclite, K. K. Gleason, “Chemical Vapor Deposition of Polymeric Thin Films: Applications in Sensors, Biotechnology, Microelectronics/Organic Electronics, Micro-fluidics, MEMS, Composites, and Membranes”, Reports on Progress in Physics, 75, 016501 (2012).