Thick-film technology for novel applications

The development of ceramic thick-film elements is important for the electronics and energy industry in order to develop new devices for human well-being. This talk will discuss recent advances in screen printing and aerosol deposition methods for producing ceramic thick films for state-of-the-art and future applications. Screen printing is a widely used process that is characterized by its cost-effectiveness, but requires densification of the ceramic films at high temperatures, above 800 °C. Aerosol deposition, on the other hand, enables the preparation of dense ceramic films at room temperature, which opens up new application possibilities.

The talk will focus on the preparation, characterization, and use of powder-based thick films for applications ranging from microelectronic components to protective coatings. The functional ceramic lead-based and lead-free thick films for applications in sensors, actuators, flexible electronics, and energy-related technologies will be discussed. We have shown that using aerosol deposition, it is possible to produce piezoelectric and electrocaloric thick films on flexible polymer substrates that can withstand 100,000 bending cycles without degradation of their functional properties. In addition to ceramic powders, other materials such as graphite, polymers, and metals can also be efficiently deposited, opening up the possibility for designing new multilayer and composite thick film structures.

Zoom:
Meeting URL: https://syddanskuni.zoom.us/j/67740132777
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