

Printing processes for smart sensors and antibacterial thin films

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In the packaging sector, a wide variety of materials, processes and technologies have been developed over the past century and the field is still fully expanding. However, packaging materials have today exceeded the sole role of physical barrier, and innovations such as active and intelligent packaging aim at proposing new interesting functionalities. These functionalities include antibacterial, antioxidant or gas scavenger for active packaging, as well as sensors and RFID systems for intelligent packaging technologies.

Printing and coating processes were used to prepare two different active and intelligent technology. Firstly, a thin, transparent and antibacterial layer made of cellulose nanofibrils and silver nanowires were prepared, either by bar coating or screen-printing techniques. Secondly, gas sensors were prepared by screen-printing using Metal Organic Framework and conductive carbon materials for the preparation of smart sensors. The proposed systems show the potential of printing and coating processes as versatile tools to tailor active and smart properties for packaging applications.