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Ph.D. thesis (2018-2021)
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Development of innovative and transparent Radio-Frequency devices based on nanocelluloses-silver nanowires hybrid system

Système Passifs Radio Fréquences Innovants Transparents Hybrides de nanocelluloses et nanofils d'argent

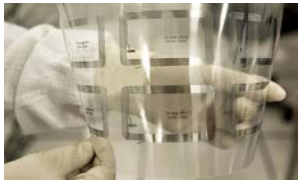
MatBio / FunPrint

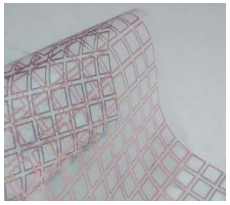
Context

Radio-frequency area

- Security field
- Development of IoT (Internet of Things)

Advantages of printed electronics





- Flexible
- Low environmental impact, Additive methods
- Productivity (large surface)

New market :

- Smart packaging
- Smart building
- Telecommunications
- Health

In collaboration with IMEP-LaHC

Funded by

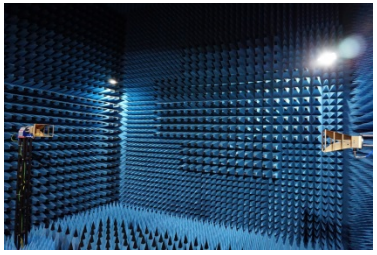
Methods

Surface characterization

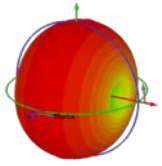
- Morphological studies : SEM, AFM, Alicona
- Rheological behavior : Viscosity, Shear stress
- Influence of printing parameters : thickness, roughness, transparency, conducitivity, surface energy …
- Computational simulation

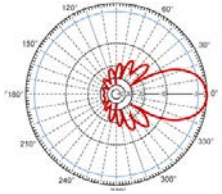
Radio-frequency

- Anechoic chamber



- Network analyser, Simulation Software

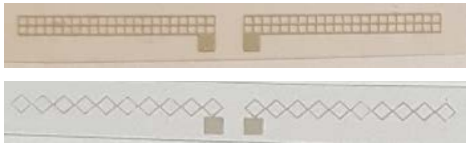




Results

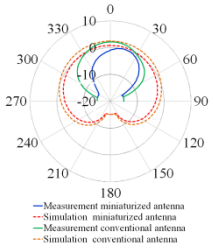
Transparent R-F devices

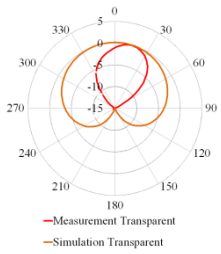
- Design of meshed antennas



- Transparent ink compatible with radio-frequencies applications

Efficient transparent devices





Conferences:
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