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**Gallium nitride metasurfaces: Innovative perspectives and industrially relevant manufacturing processes**

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The common way to manipulate light consists of using classical optical elements such as lenses and mirrors. Since few years, a new way to manipulate light with two dimensional optical components (metasurfaces) have been exploited to control light propagation using local phase discontinuities. Abrupt modifications of the fields across an interface can be engineered by depositing an array of sub-wavelength resonators specifically tailored to address local amplitude, phase and polarization changes. Metasurfaces have been implemented to obtain various sorts of optical functionalities, ranging from the basic control of the transmission and reflection of light, to the control of the radiation patterns for comprehensive wave front engineering and holography. In this presentation, we will review the recent works in this field and explain the physical mechanisms utilized for designing efficient planar optical components. We will also talk about our recent results on free-standing dielectric metasurfaces and introduce the concept of conformal boundary optics. As a conclusion, we will present innovative semiconductor based metasurfaces and discuss GaN-metasurfaces manufacturing processes relevant for electronics and optoelectronics industrial applications, e.g. light-emitting diode (LED) and/or augmented reality devices.

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