

## **Fabrication of ultrathin GaN membranes with relatively large sizes for practical applications**

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We propose for the implementation a cost effective technological route allowing one to fabricate ultrathin GaN membranes for sensor applications. The main efforts are focused on the design and development of active parts of sensor devices. Our approach is based on the modified version of previously proposed Surface Charge Lithography. In achieving the main goal, several technological steps were involved such as ion treatment of the surface in a controlled manner and photoelectrochemical etching process. As a result, by choosing the right parameters of the Ar<sup>+</sup> plasma treatment, mask design, and etching conditions, we demonstrate the possibility to fabricate relatively large, ultrathin, continuous GaN membranes directly connected to Ohmic contacts on bulk GaN.

