

Design and maskless fabrication of ultrathin suspended membranes of GaN

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[https://doi.org/ doi:10.1002/pssr.201206020](https://doi.org/doi:10.1002/pssr.201206020)

Abstract

We report the maskless fabrication of ultrathin suspended GaN membranes designed by focused ion beam treatment of the GaN epilayer surface with subsequent photoelectrochemical etching. This technological approach allows the fabrication of ultrathin membranes, as well as supporting micro/nanocolumns in a controlled fashion. The analysis of the spatial and spectral distribution of microcathodoluminescence demonstrates that the membranes exhibit mainly yellow luminescence. These results pave the way for the fabrication of ultrathin suspended GaN membranes for MEMS/NEMS applications.