

## **Fröhlich modes in GaN columnar nanostructures**

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### **Abstract**

GaN columnar nanostructures fabricated by electrochemical dissolution of bulk material have been studied by micro-Raman spectroscopy. The anodization induces an increase in the intensity of Raman scattering accompanied by a breakdown of the polarization selection rules and by the appearance of a new mode at  $716\text{cm}^{-1}$ , i.e., in the frequency gap between the transverse optical and longitudinal optical bulk phonons. We present a Raman line-shape analysis based on the effective dielectric function of a composite that brings to light the Fröhlich character of this mode.