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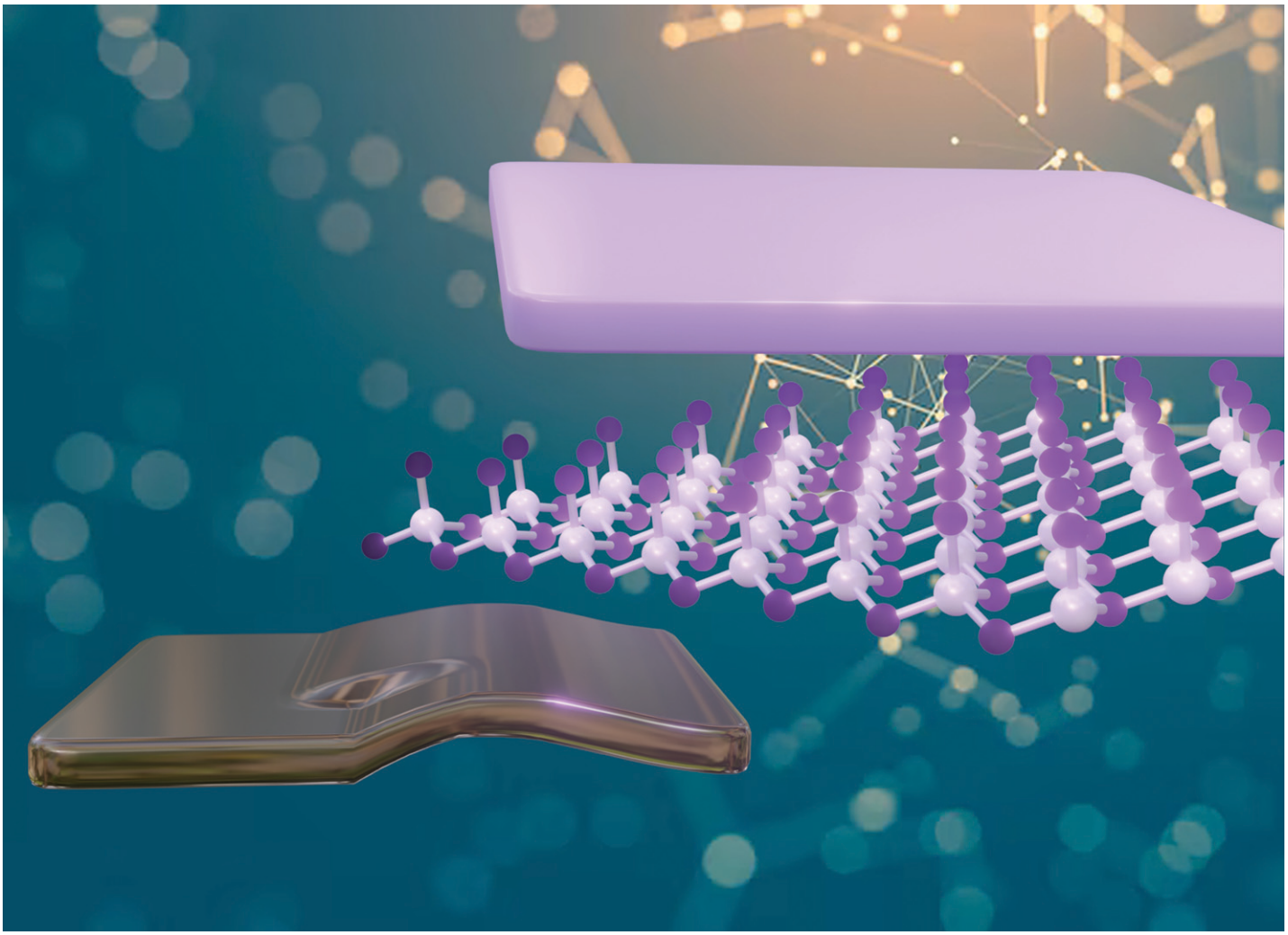

Showcasing research from *NanoFab*'s laboratory, CNR NANOTEC, Institute of Nanotechnology, Lecce, Italy.

AlN interlayer-induced reduction of dislocation density in the AlGaN epilayer

The ultrawide-bandgap AlGaN alloy system holds promise for next-generation power semiconductor and UV optoelectronic devices. By incorporating a thin AlN interlayer (≤3 nm) between the GaN buffer and AlGaN layers, our study demonstrates a 30% reduction in dislocation densities, and a 33% increase in electron mobility. These improvements lead to significantly enhanced optical quality, with a 7-fold increase in AlGaN emission intensity, and a 20% reduction in its full-width at half-maximum. This approach effectively addresses key structural defects, advancing the performance of AlGaN/GaN heterostructures.

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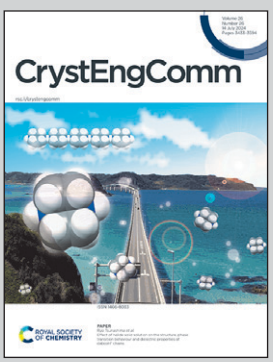

See David Maria Tobaldi *et al.*, *CrystEngComm*, 2024, **26**, 3475.

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