

Electronic supplementary information

Electrically-pumped WGM microlaser realized in n-AlGaIn/n-ZnO:Ga microwire/Pt/MgO/p-GaN double heterojunction device

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Table S1 | Structure parameters of p-GaN and n-AlGaN layers.

GaN	parameters
Growth substrate	PSS single 430+/-25um
Growth direction	Grow along the (0001) direction (C plane)
Undoped GaN layer thickness	3.5 μm
p-GaN layer thickness	2.5 μm
p-type layer doping element	Mg (30%)
Hole concentration	$4.05 \times 10^{18} \text{ cm}^{-3}$
AlGaN	parameters
n-type layer doping element	Si
Al content	45%
Electron mobility	$30 \text{ cm}^2 \text{ V}^{-1} \text{ S}^{-1}$
Electron concentration	$1.05 \times 10^{19} \text{ cm}^{-3}$

Supplementary Section S1 | The measurement setup.

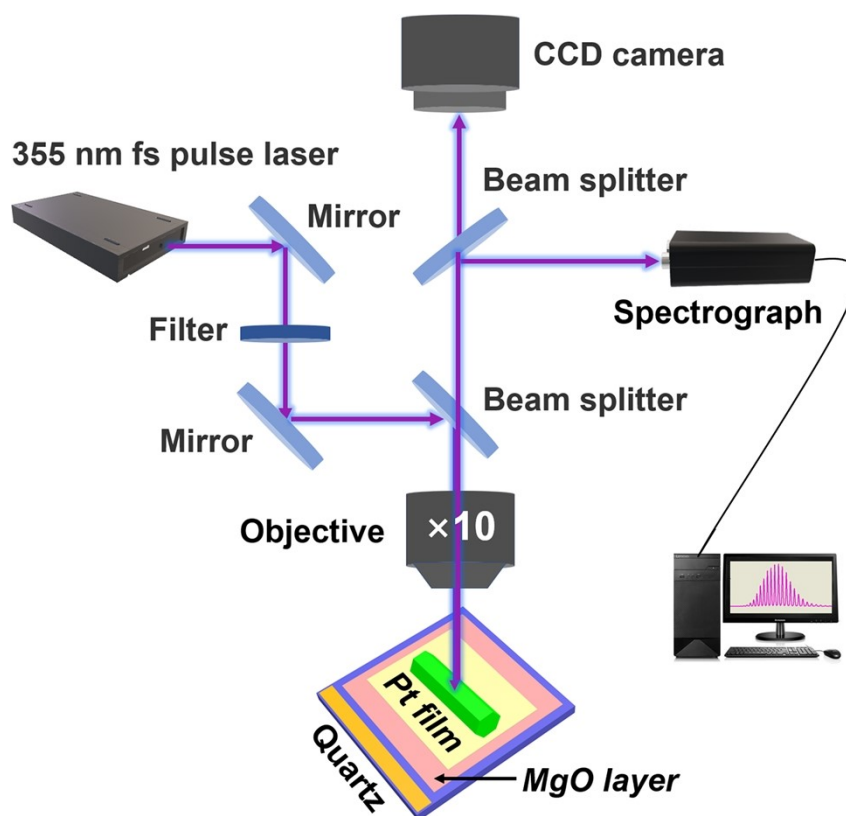


Figure S1. The schematic view of the measurement equipment and optical path.

Supplementary Section S2 | Photograph of the carefully-fabricated n-AlGaIn/n-ZnO:Ga MW/Pt/MgO/p-GaN double heterostructure device.

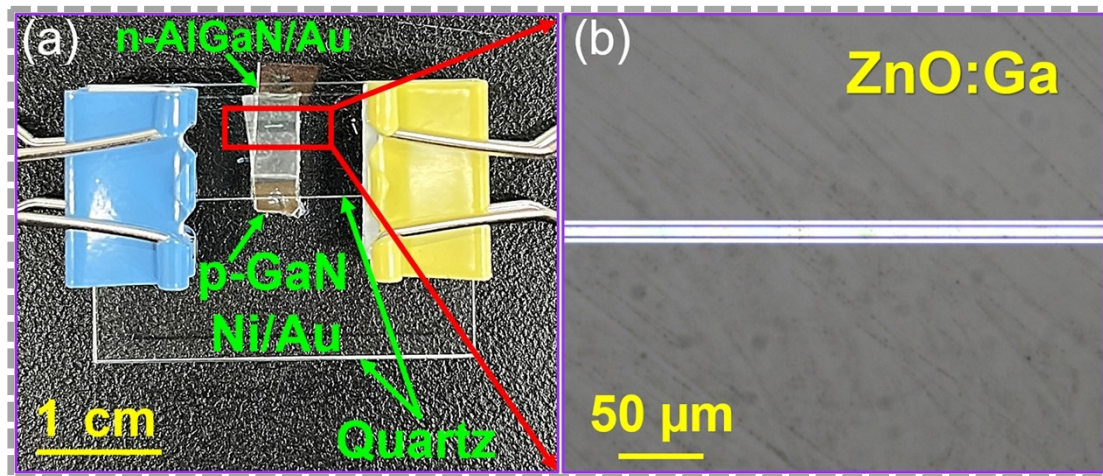


Figure S2. (a) Optical photograph of a real double heterostructure diode. (b) Magnified view of the single ZnO:Ga MW on the Si substrate.