

Supplementary information

Reducing specific contact resistivity of V/Al/Ti/Au n-electrode on n-AlGaIn with Al content over 80% for far-UVC LEDs

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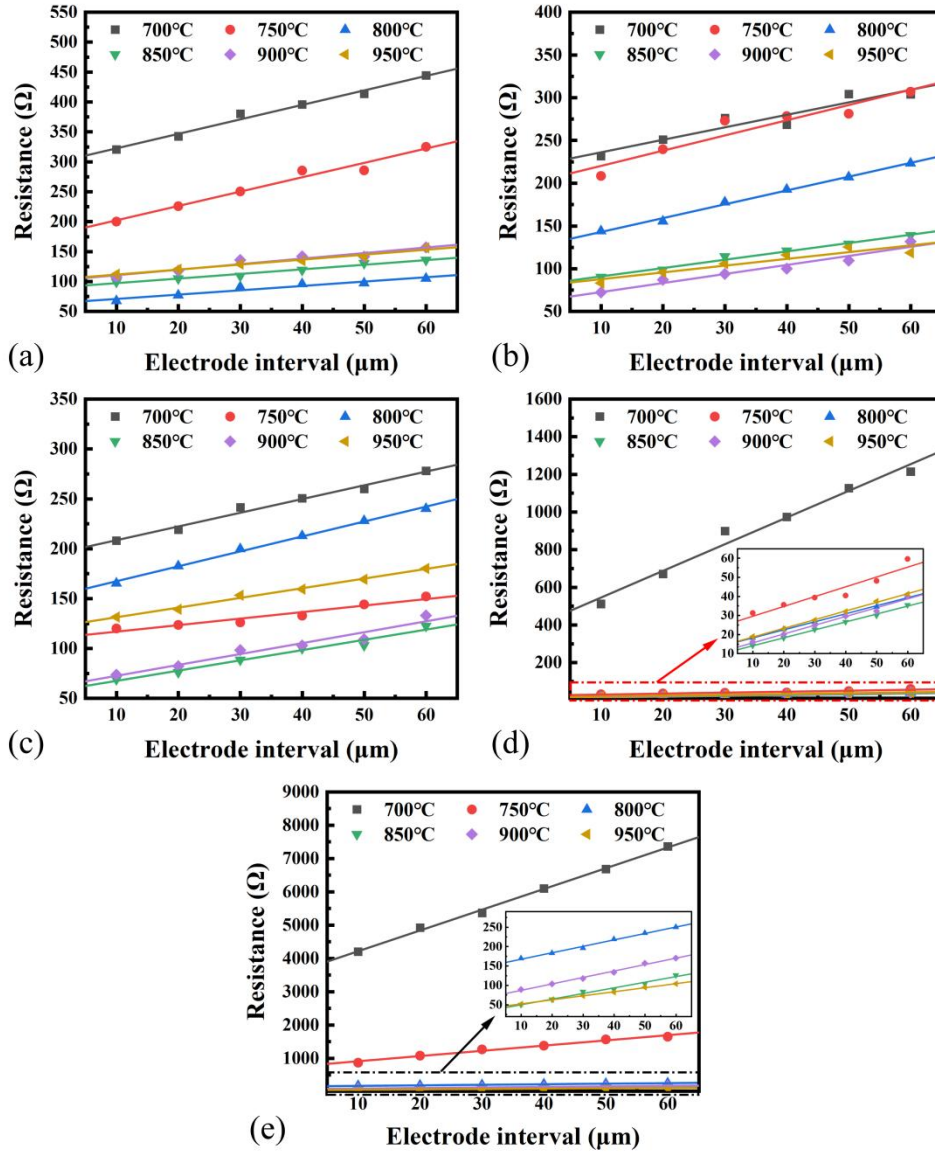


Fig. S1. (Color online) (a)~(e) represent the relationship between the resistance of samples A~E as a function of the electrode spacing within the annealing temperature range of 700~950°C.

Table S1. Specific contact resistivity of electrodes A~E within the temperature range of 700~950 °C.

Annealing temperature (°C)	Specific Contact Resistivity ($\Omega\cdot\text{cm}^2$)				
	A	B	C	D	E
700	1.15×10^{-1}	1.05×10^{-1}	8.66×10^{-2}	6.69×10^{-1}	1.80×10^{-1}
750	5.10×10^{-2}	7.23×10^{-2}	4.67×10^{-2}	1.51×10^{-1}	3.61×10^{-3}
800	1.74×10^{-2}	3.10×10^{-2}	4.42×10^{-2}	4.34×10^{-2}	1.45×10^{-3}
850	3.26×10^{-2}	2.12×10^{-2}	9.98×10^{-3}	2.69×10^{-3}	7.30×10^{-4}
900	3.46×10^{-2}	1.14×10^{-2}	1.09×10^{-2}	8.31×10^{-3}	1.11×10^{-3}
950	3.89×10^{-2}	2.53×10^{-2}	4.78×10^{-2}	5.17×10^{-3}	1.36×10^{-3}

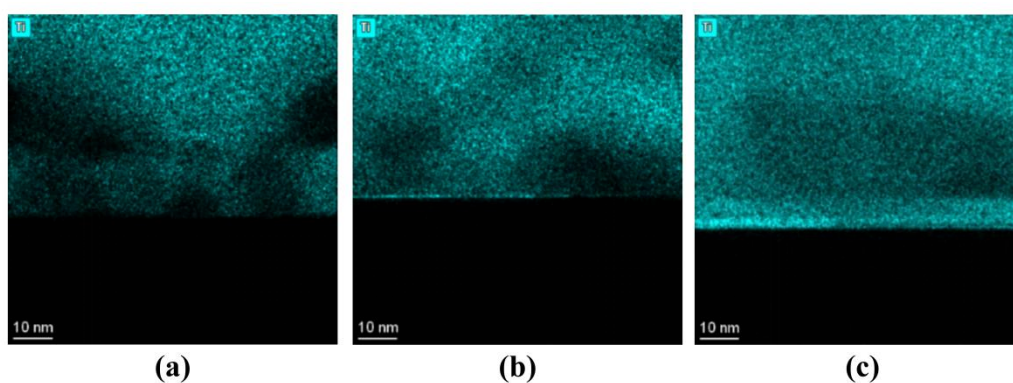


Fig. S2. (Color online) (a), (b), and (c) are the EDS mappings of Ti element in the electrodes A700, A800, and C850, respectively.

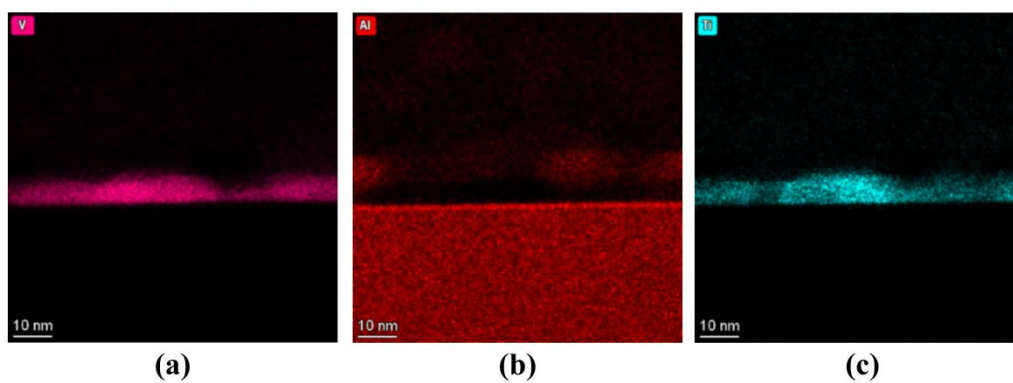


Fig. S3. (Color online) EDS mappings of (a)V, (b)Al, and, (c) Ti in the electrode E850, respectively.

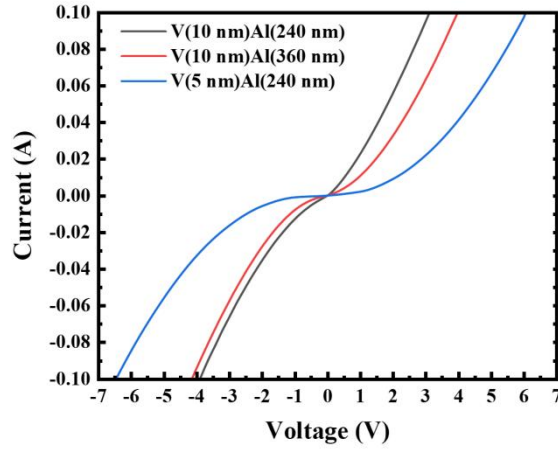


Fig. S4. (Color online) IV curves of the electrodes V(10 nm)/Al(240 nm)/Ti(40 nm)/Au(50 nm), V(10 nm)/Al(360 nm)/Ti(40 nm)/Au(50 nm), and V(5 nm)/Al(240 nm)/Ti(40 nm)/Au(50 nm) on the Al-rich n-Al_{0.81}Ga_{0.19}N after annealing at 850 °C for 30 s.

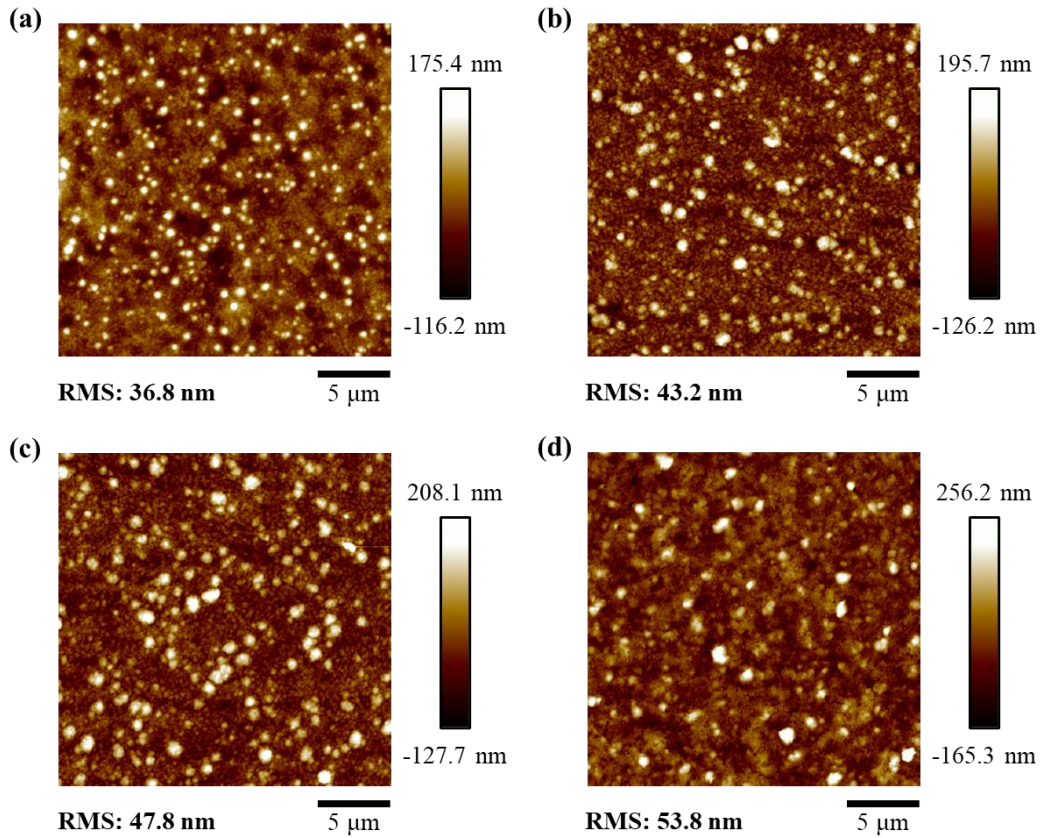


Fig. S5. (Color online) AFM images of the V/Al/Ti/Au electrode after annealing at optimal temperature. The thickness of V is 10 nm, and the thicknesses of Al in (a), (b), (c) and (d) are 80 nm, 160 nm, 240 nm, and 320 nm, respectively.