Supporting Information

Growth of large-scale vertically aligned GaN nanowires and their heterostructures with high uniformity on SiO*x* by catalyst-free molecular beam epitaxy

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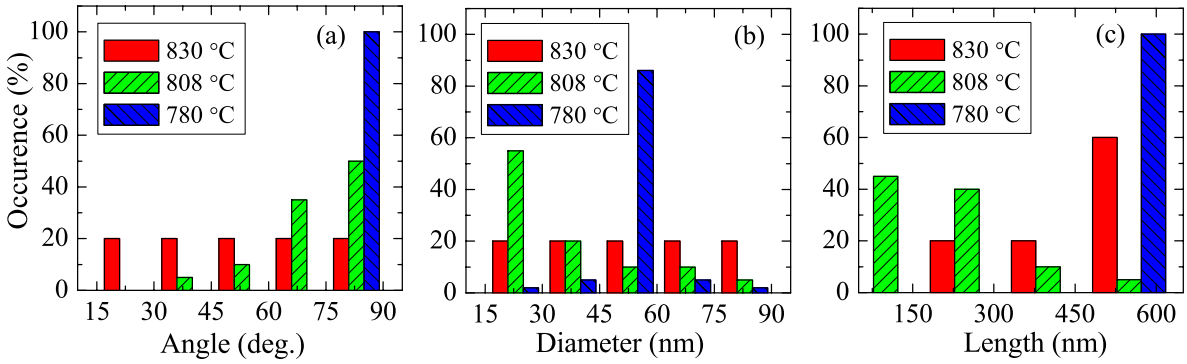

Figure S1: The statistics of GaN nanowires grown at different substrate temperatures. (a) The nanowire angle with respect to the underneath SiO*x* template. (b) and (c) The nanowire diameter and length, respectively. It can be seen that at optimized substrate temperature, the GaN nanowires are nearly vertically aligned on SiO*x* template, with highly uniform diameters (between 50 and 60 nm) and lengths (around 600 nm).

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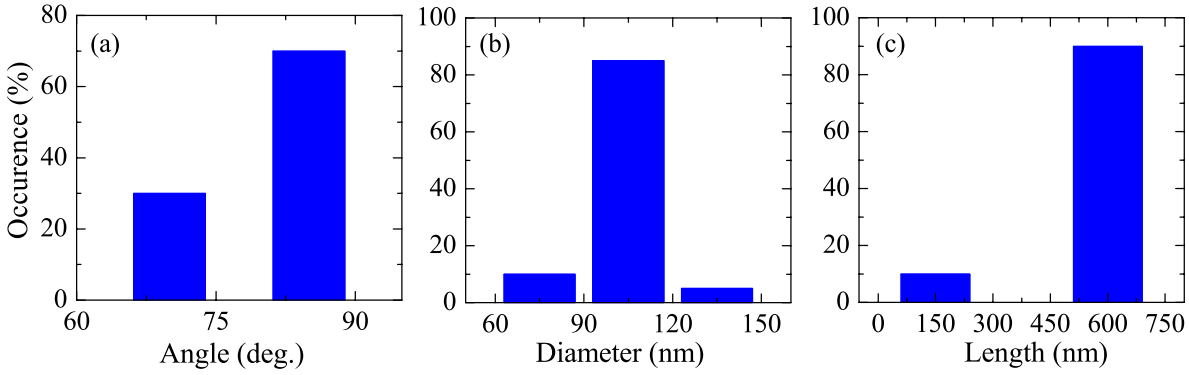

Figure S2: The statistics of InGaN/GaN nanowire heterostructures. (a) The nanowire heterostructure angle with respect to the underneath SiO*x* template. (b) and (c) The nanowire heterostructure diameter and length, respectively. It can be seen that above 70% of InGaN/GaN nanowire heterostructures are nearly vertically aligned on SiO*x* template, with highly uniform diameters (around 100 nm) and lengths (around 600 nm). The larger diameter of InGaN/GaN nanowire heterostructures, compared with that of GaN nanowires, can be ascribed to lower substrate temperature. The purpose of using lower substrate temperature is to increase In incorporation and extend the emission to longer wavelength. Moreover, the presence of short nanowires here are due to the shadow effect as mentioned in the main text.