Supporting Information to:

Single-Crystalline GdB_6 Nanowire Field Emitters

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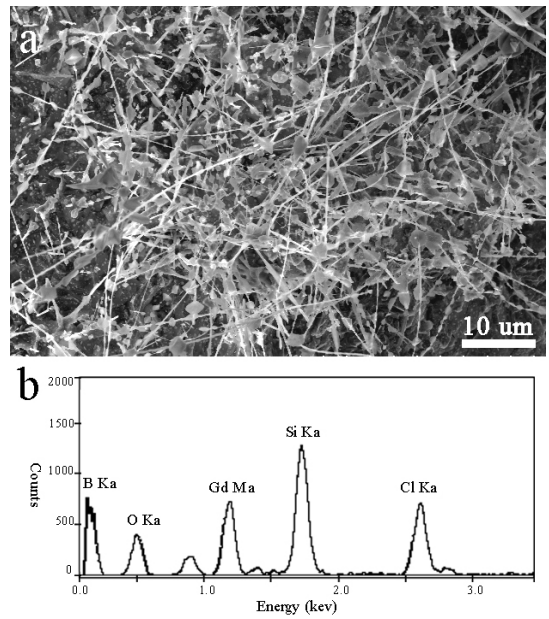

Figure S1. (a) SEM image of the GdB_6 nanowires grown on a silicon substrate. Their diameters are ranging from below 100 nm to more than 1 μm. (b) EDX spectrum of the produced nanowires showing the composition GdB_6. Cl and O are impurities originated from the reactions and Si signal is from the substrate.

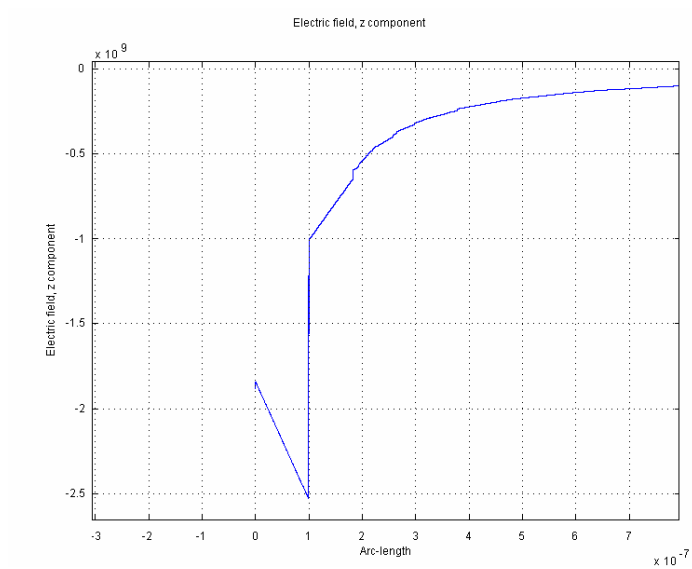

Figure S2. An FEMLAB simulation of the strength of local electric field from the center to the edge of the nanowire square tip-top surface. The numerical simulation is based on the model with a square rod as the cathode (200 nm × 200 nm × 20 μm), a flat board as the anode (1 cm ×1 cm × 5 mm) and a separation distance of 250 μm in between. After the electric field potential distribution was calculated under a driving voltage of 750 V between the cathode and the anode, the electric field strength was obtained by differentiating the potential along the rod's axial direction. A maximum value of 2.5 × 10^9 V/m was then obtained at the edge of the top surface, which corresponds to a β factor of 3.3 × 10^4 cm^{-1} after dividing by the applied voltage.