Supporting Information

Strong blue-light emission in the flexible branched nanowire-on-nanowire pristine ZnO organizations constructed by a tandem multiprong growth nanoarchitectures

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Figs. S1-S10



Figure S1. Top, schematic diagram of the Sn-assisted VPT method (in section) used for the controlled growth of *T*-ZnO μ NCs. Bottom, the blue (red) dots represent different furnace-temperature calibration results conducted at winter (summer) with the T_E shown, respectively. The distance refers to distance from the entrance end (low-temperature zone) of the furnace. The shadow region guides the eyes. The furnace temperature was calibrated and measured using a PtRh-Pt thermocouple.



Figure S2. Digital images of the samples before and after the VPT growth. (Top) side-view, and (Bottom) Bird-view.



Figure S3. (a-d) SEM and (e-g)TEM images of the as-grown nanotetropod–on–microtetropod products grown on the Au NPs Si substrates at $T_s = 820 - 850$ °C. The growth direction of the ZnO NWs is [001],



Figure S4. SEM images of the as-grown fine nanotetropod–on–microtetropod products grown on the Au NPs Si substrates at $T_s = 876 - 900$ °C. Inset in (b), closer image of a yellow dotted line rectangle region.



Figure S5. SEM images of the as-grown comelike products grown on pure Si substrates at $T_s = 876 - 900$ °C. It composed with the double-side comb, and single-side comb looking more like a centipede.



Figure S6. (a)-(b) SEM images of the as-grown comelike products grown on pure Si substrates at $T_s = 876 - 900$ °C. (c) HRTEM image from the nanosaw. Inset, its simulated HRTEM image from the the individual nanosaw. The growth direction of the ZnO NWs is [001]. (d) Representative EDX (Oxford) spectra obtained from the individual nanosaw.



Figure S7. (a)-(d) Representative high-magnification SEM (FEI-SIRION 200) images of the NW–on– micro-HP grown in high yields on pure Si substrates at $T_s \sim 750-770$ °C. Inset in (c), cactus. The top of HP is raised in (d) and the white arrow guides the eyes.



Figure S8. (a)-(c) Representative high-magnification SEM (FEI-SIRION 200) images the NW–on–micro-HP grown grown in high yields on pure Si substrates at $T_s \sim 770-790$ °C. The red arrows guide the eyes. (d) TEM images of the flexible ZnO nanowires showing no gold caps or with small gold caps at the growth fronts. The red circle guides the eyes. The growth direction of the flexible ZnO NWs is [001]. Upper Inset in (d), HRTEM image of the flexible ZnO NW. Bottom Inset in (d), its simulated HRTEM image from the the flexible ZnO NW as marked with yellow dotted line rectangle.



Figure S9. (a)-(e) SEM images of the lateral-type branched NW-on-NW products grown on the Au NPs Si substrates with lateral growth at approximately $T_s = 820 - 840$ °C.



Figure S10 O_{1s} core-level XPS spectrum of the spider plant-like morphology ZnO nanoarchitectures. The peaks were fitted using a pure Guassian function. The red dotted line arrow guides the eyes.