Electrodeposited, Transverse Nanowire Electroluminescent Junctions: SUPPORTING INFORMATION

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S1. Detailed Process Flow for the Fabrication of a Single Transverse Nanowire Electroluminescent Junction

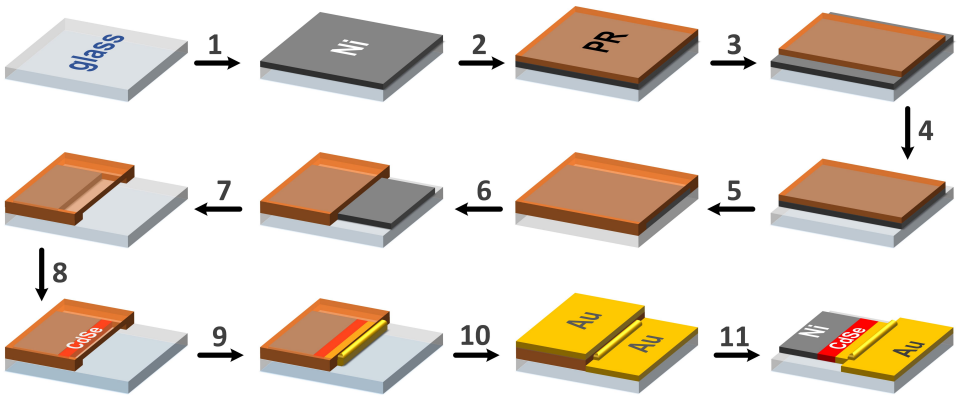

Figure S1: Detailed process flow. Step 1, a 60 nm thick layer of nickel was thermally evaporated on a precleaned soda lime glass slide. Step 2, a layer of photoresist was spincoated onto the nickel surface, followed by a soft-baking process. Step 3, a contact mask was used to photolithographically create a 20um finger pattern on the photoresist layer. Step 4, the freshly exposed nickel layer was then removed using nickel etchant, resulting in a 20 μm wide Ni finger covered by the photoresist. Step 5, the photoresist layer was then removed with acetone and a second layer of photoresist was spincoated. Step 6, half of the photoresist on the nickel finger was photolithographically removed. Step 7, exposed nickel was over-etched to create a horizontal trench. Step 8, the CdSe nanowire was then electrodeposited into the trench potentiostatically. Step 9, the gold contact was then electrodeposited onto the exposed edge of the CdSe nanowire until the gold emerged from the trench. Step 10, a layer of gold was thermally evaporated to form a connection with the electrodeposited gold contact. Step 11, the thermally evaporated gold on the photoresist coated portion of the device was removed by lift-off.

S2. *EL* Measurement Set-up Schematic

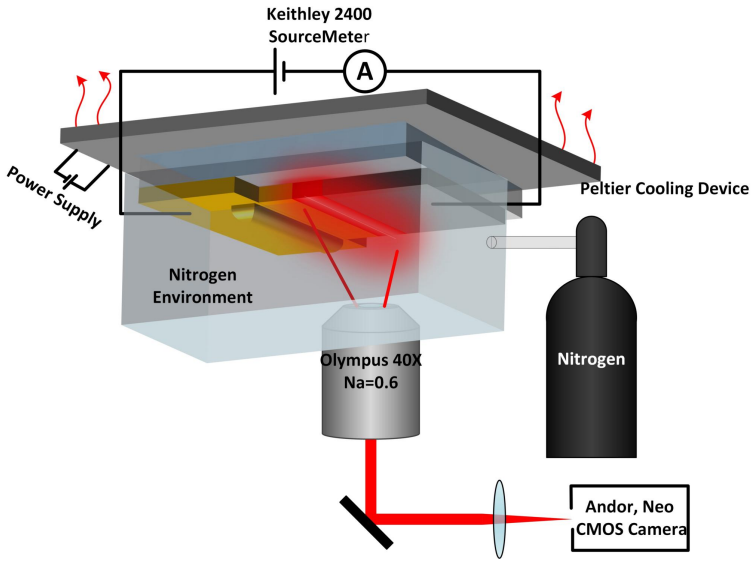

Figure S2: EL measurement set-up. The *tn-ELJs* was glued on a $1inch \times 3inches$ glass slide then glued on a peltier cooling device using the copper tape. The peltier was used to remove the heat generated during EL measurement. The *tn-ELJs* was connected to a Keithley 2400 sourcemeter, and then the whole device was placed on an inverted microscope stage. The device along with the objective lens were wrapped with plastic wrap to create a sealed environment. The food wrap was then pierced through by a small glass pipe connected with a nitrogen tank. A nitrogen environment was created during EL measurement to avoid water condensation or frost.

S3. Normalized EL Spectra as a Function of Voltage

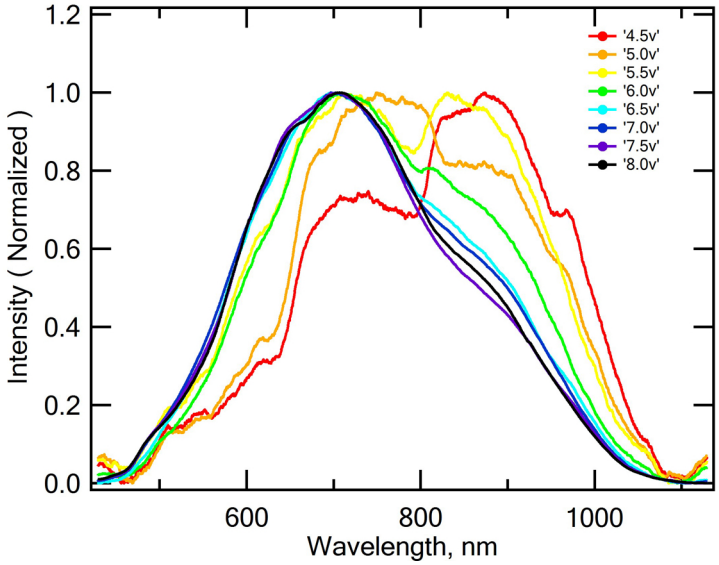

Figure S3: Normalized EL spectra as a function of E_{app} for a ten-element *tn-ELJs* with w_{CdSe} = 102 nm.