Supporting information for

An organic- inorganic three-component nanojunction array: design, construction and its reversible diode-like resistive electrical switching behavior

Jing Wang\textsuperscript{a}, Weiqing Xu\textsuperscript{a}, Xiangyuan Liu\textsuperscript{a, c}, Fou Bai\textsuperscript{b}, Xianghua Zhou\textsuperscript{a}, Shuping Xu\textsuperscript{a*}

a. State Key Laboratory of Supramolecular Structure and Materials, Institute of Theoretical Chemistry, Jilin University, Changchun 130012, P. R. China.
b. College of Chemistry, Jilin University, Changchun 130012, P. R. China.
c. Department of Physics, School of Science, Changchun University of Science and Technology, Changchun 130022, P. R. China

Tel: 86-431-85168505; Fax: 86-431-85193421;

*Email: xusp@jlu.edu.cn
1. Chemicals.

TCNQF$_4$ (7, 7, 8, 8-tetracyano-2, 3, 5, 6-tetrafluoroquinodimethane) was purchased from Sigma Company. Acetonitrile (for HPLC, ≥99.9%) was obtained from Aladdin Company. Tetrabutyl orthotitanate (≥98%) was come from Tianjin Fine Chemical research institution. Absolute ethyl alcohol (99.7%), hydrochloric acid (36–38%), silver nitrate (99.5%), and trisodium citrate (98%) were obtained from Beijing Chemical Plant. fluorine-doped tin oxide (FTO) coated glass slides (surface resistance <10 ohm/sq and transmittance ≥77%) were from Zhuhai Kaivo Optoelectronic Technology Co., Ltd. The ultrapure water is purified by a MilliPore system (≥18 MΩ).

2. Semiconductor Characterization System for Electrical property.

![Figure S1. The self-made semiconductor characterization system.](image)
3. Contact Resistance at Different Locations of AgTCNQF₄-AgNPs-TiO₂ by Using C-AFM.
Figure S2. The current mapping (A, B, C, D, E, F, J and H), and corresponds to current-voltage (I-V) curves of AgTCNQF$_4$-AgNPs-TiO$_2$ three component nanojunction at different locations (the sign of
“+1” marked in the current mapping A, B, C, D, E, F, J and H) of a nanobranch by a C-AFM. The scanning voltage ranges from 9 to -9 V and from –9 to 9 V, respectively.

3. Synthesis of AgTCNQF$_4$ on Ag Film and FTO slide.

Silver-tetrafluorotetracyano-p-quinodimethane (AgTCNQF$_4$) microrods were synthesized via a solution process.[S4] A 200 nm-thickness Ag film was achieved by the vacuum thermal evaporation deposition on the substance of clean glass slides or FTO glass slides, respectively. Subsequently, these Ag film decorated slides were immersed into a 2.0 mM TCNQF$_4$ acetonitrile solution for 1.0 min. AgTCNQF$_4$ microrods formed above the slides. These slides were then taken out of the above solution and washed by anhydrous acetonitrile to remove the residue.

![Figure S3. SEM image of the AgTCNQF$_4$ microrods.](image)

References:


