

Abstract Submitted  
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**VO<sub>2</sub> Semishells/Au Nanohemispheres Hybrid Nanostructure with Tunable Optical Property** KI WAN NAM, ABBAS MAROOF, DONG-GUK CHO, Seoul Natl Univ, BONG-JUN KIM, ETRI, HYUN-TAK KIM, University of Science and Technology, SEUNGHUN HONG, Seoul Natl Univ — Vanadium dioxide (VO<sub>2</sub>) has been drawing much attention due to its unique property of a reversible phase transition accompanying significant changes in electrical and optical properties. In addition, the optical property of VO<sub>2</sub> can be tuned by depositing metal on the VO<sub>2</sub>, and thus VO<sub>2</sub>-metal hybrid structures have been intensively studied to develop smart materials with tunable optical properties. Herein, we developed hybrid nanostructures based on VO<sub>2</sub> semishells (SSs) and Au nanohemispheres (NHs) as tunable plasmonic nanostructures. The hybrid structure exhibited an enhanced optical absorbance compared to that of the VO<sub>2</sub> SSs alone, which could be attributed to a strong plasmonic coupling between VO<sub>2</sub> SSs and Au NHs. Furthermore, the positions of peaks in their absorbance spectra can be adjusted by controlling temperatures, presumably due to the phase transition of the VO<sub>2</sub> SS structures. Our hybrid nanostructures with tunable optical properties can be useful for various optoelectronic applications such as photothermal nanoregulators and ultrafast optical switches

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