

Synthesis of VO₂ based nanoparticles with reversible IR reflection and transmission

유명상, 임상혁†

경희대학교 결정기능화공정센터(FCC)

(imromy@khu.ac.kr†)

In modern life, the energy consumption of buildings in a city is rapidly increasing because most people spend their time in buildings. Therefore, to make the rooms convenient and comfortable, more energies are required to control the temperature of room warm or cool. Our country is supplying the electric power to the buildings from the imported fossil or nuclear energy source. Currently, the electric energy consumption at peak time in summer or winter season is gradually reaching to the limit of maximum power generation by the power plants. So the government cannot cope with the energy demand at peak time without construction of additional power plants. Hence it is strongly required to reduce the electric energy consumption for cooling and warming rooms in buildings at peak time because significant electric energies are spent for that. Here we synthesized VO₂ based nanoparticles which can reversibly control IR (infrared) reflection and transmission with temperature in order to reduce the electric energy consumption for cooling and warming rooms in buildings or cars because they are known to have sharp, first order, reversible, thermally-induced and metal-to-insulator (MIT) transition.