Thermochromic properties of W and Mo co-doped VO_2 nanoparticles

조초원[1,2], 유중환[1,*], 신지혜[1]
[1]한국세라믹기술원; [2]고려대학교
(jwyoo@kicet.re.kr*)

Monoclinic phase vanadium dioxide(VO_2) takes place its phase reversibly into tetragonal phase at about 68℃. Because of the metal-insulator transition(MIT) characteristic of VO_2, it has great application potentials such as temperature sensing devices and intelligent energy conserving windows coating. The transition temperature(T_c) can be adjusted by doping with W, Mo, Nb and etc. Previous studies on reducing T_c of VO_2 have been investigated mainly as single W doped into VO_2, but it reveals drastic changes of T_c. As an alternative, co-doping method could be possible for fine control of T_c. In this study, We prepared W-Mo co-doped VO_2 particle using hydrolysis of $VOSO_4$. From the XRD results, the crystallinity of W-Mo-VO_2 with VO_2(M) phase is stronger than W-VO_2 itself. T_c can be precisely controlled by adding Mo to W-VO_2 particle from DSC analysis. TEM analysis confirmed the W-Mo-VO_2 has uniform morphology and narrow size distribution. For more information, FE-SEM, XPS studies have been carried out.