

## Fabrication of 3D micro-structures of $V_2O_5$ hybridized polyelectrolyte multilayers through multilayer transfer printing

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$V_2O_5$  nanowires (NWs) are attracting much attention in various applications such as FET, anti-static films, sensors and actuators because of their outstanding material properties of easy synthesis, homogeneity, and semiconducting behavior. However, general strategy of a NW-related fabrication has been limited to utilize and control the individual NWs to realize nano-electronic devices. In order to extend the applicability of  $V_2O_5$  NWs to the conventional electronic devices, therefore, we fabricated 3D structures of  $V_2O_5$  NWs through the multilayer transfer printing of  $V_2O_5$  hybridized polyelectrolyte multilayers. First, we prepared alternatively deposited films of polycation and polyanion mixed with charged  $V_2O_5$  NWs onto the patterned PDMS substrate. Then, the top patterns of PDMS mold finished with negatively charged polymer was transferred to a positively charged surface using electrostatic attractions. Finally, 3D structures of  $V_2O_5$  NWs can be fabricated via consecutively transferring the hybridized films, which will be beneficial for the development of flexible electrodes.