Core-regenerated vapor-solid growth of hierarchical VO\textsubscript{x}

nanobranchlets on VO\textsubscript{2}@TiO\textsubscript{2} core/shell nanorods

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Supplementary information S1.

Elemental qualitative analysis by EDS

1) EDS spectra for sample shown in Fig.3-a and e:

![Sample 3-a EDS spectrum](image1)

![Sample 3-e EDS spectrum](image2)

2) EDS spectra for sample shown in Fig.7-d and e:

![Sample 7-d EDS spectrum](image3)

![Sample 7-e EDS spectrum](image4)
**Supplementary information S2.**

a) XRD spectra after air annealing the VO2 powders in air at 350 °C for 30 mins.

![XRD spectrum for VO2](image)

b) SEM images for V₂O₅@TiO₂ core/shell samples with shell thickness at 20nm (a) and 70nm (b) without addition of PVP. No stem-like nanostructures formed on the surface of the shell.
Supplementary information S3.

The microstructure of TiO$_2$ shell.

a) and b) are the TEM images for TV-20 sample before and after annealing. R1) gives the TiO$_2$ grains and the grain boundary in a specific part of the shell. HRTEM fringes can be indexed to anatase \{101\} planar spaces.