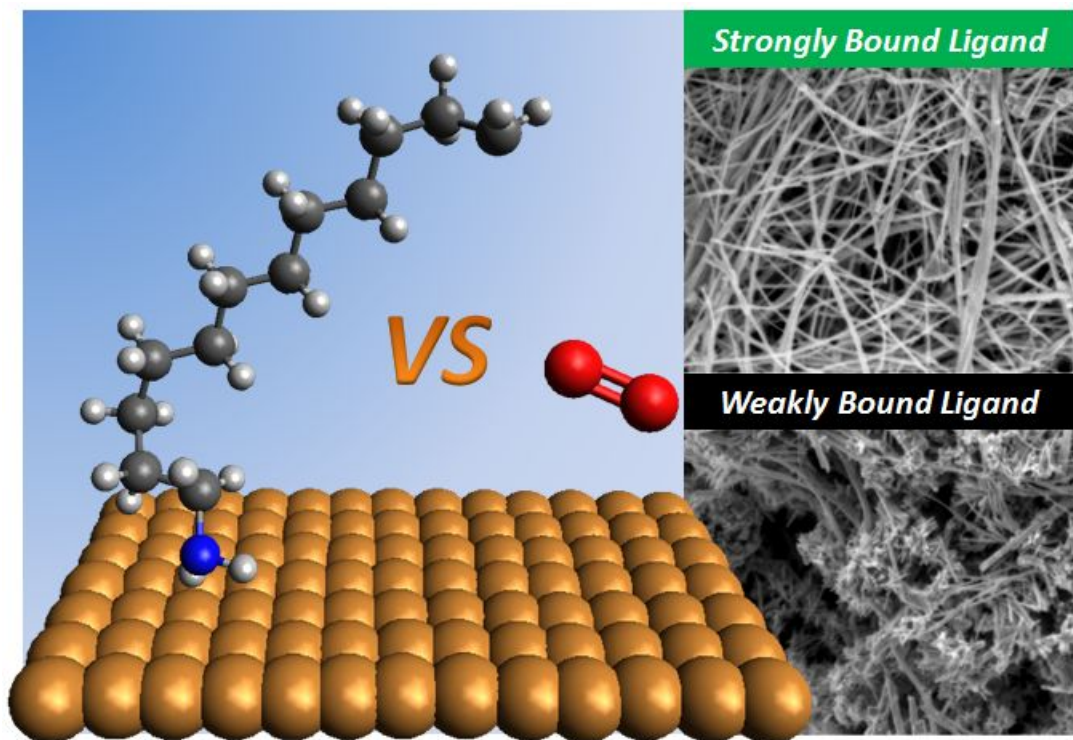


# Solution-Processable Oxidation Resistant Copper Nanowires Decorated with Alkyl Ligands

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## Supporting Information



## S1. The order-disorder transition for the alkyl chain on ODA and ODT in bulk

The DSC thermograms of bulk ODA and ODT are plotted in Fig. S1. The order-disorder transition temperatures for the alkyl chains in ODA and ODT are 56 °C and 34 °C, respectively.

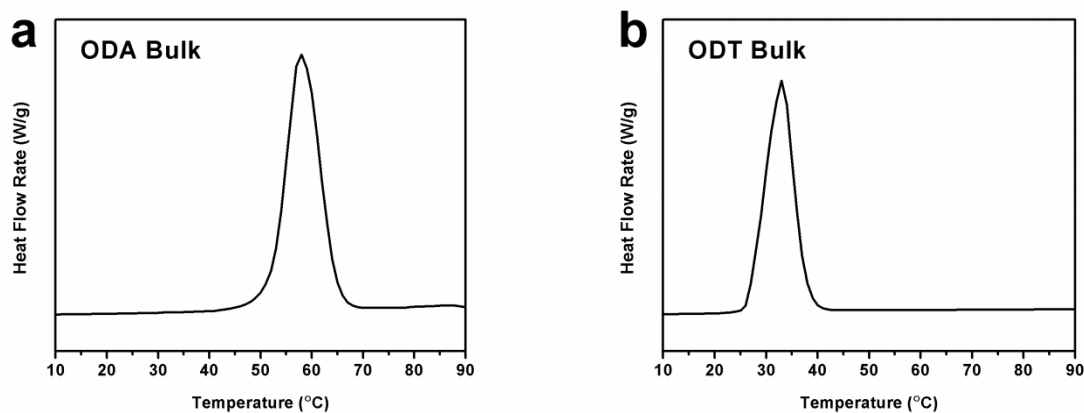


Fig. S1 DSC thermograms of bulk ODA and ODT.

## S2. The order-disorder transition for the alkyl chain on ODA and ODT in bulk

Similar to ODA and ODT-decorated Cu NWs, the C12 ligand decorated Cu NWs were treated in boiling water for 24 h. As seen in Fig. S2, the XRD diffraction for  $\text{Cu}_2\text{O}$  (111) facets were observed in DDA-decorated Cu NWs, indicating its poor oxidation resistance in a hydrothermal environment. The Cu NWs oxidation is not observed on the DDT-decorated Cu NWs. It suggests that the alkyl thiols have better protection for Cu NWs than alkyl amines could, and the alkyl chain length has little influence on the Cu NWs oxidation resistance.

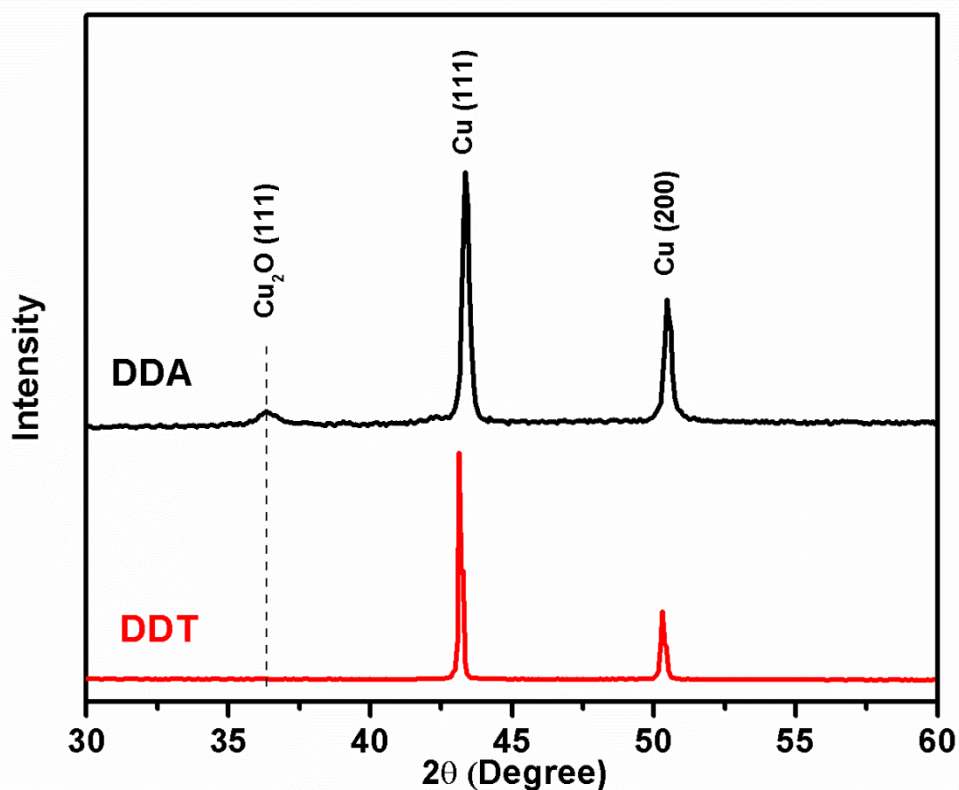


Fig. S2 XRD spectra for the Cu NWs coated with DDA or DDT treated in boiling water for 24 h.

### S3. Optical properties of the Cu NWs decorated with different alkyl ligands on glass slides

ODA (as-synthesized), ODT and DDT-decorated Cu NWs have been coated on glass slides to determine their optical properties. As seen in Fig. S3, the transmittances at the wavelength of 550 nm ( $T_{550}$ ) for the glass slides coated with ODA, DDT or ODT-decorated Cu NWs are 81, 79 and 75%, respectively. Compared with the as-synthesized Cu NWs (with ODA), the transmittance of the DDT-decorated Cu NWs is only reduced by 2%. The decrease in transmittance for alkyl thiol-decorated Cu NWs is probably due to light absorbed by the densely packed organic layers on Cu NW surfaces.

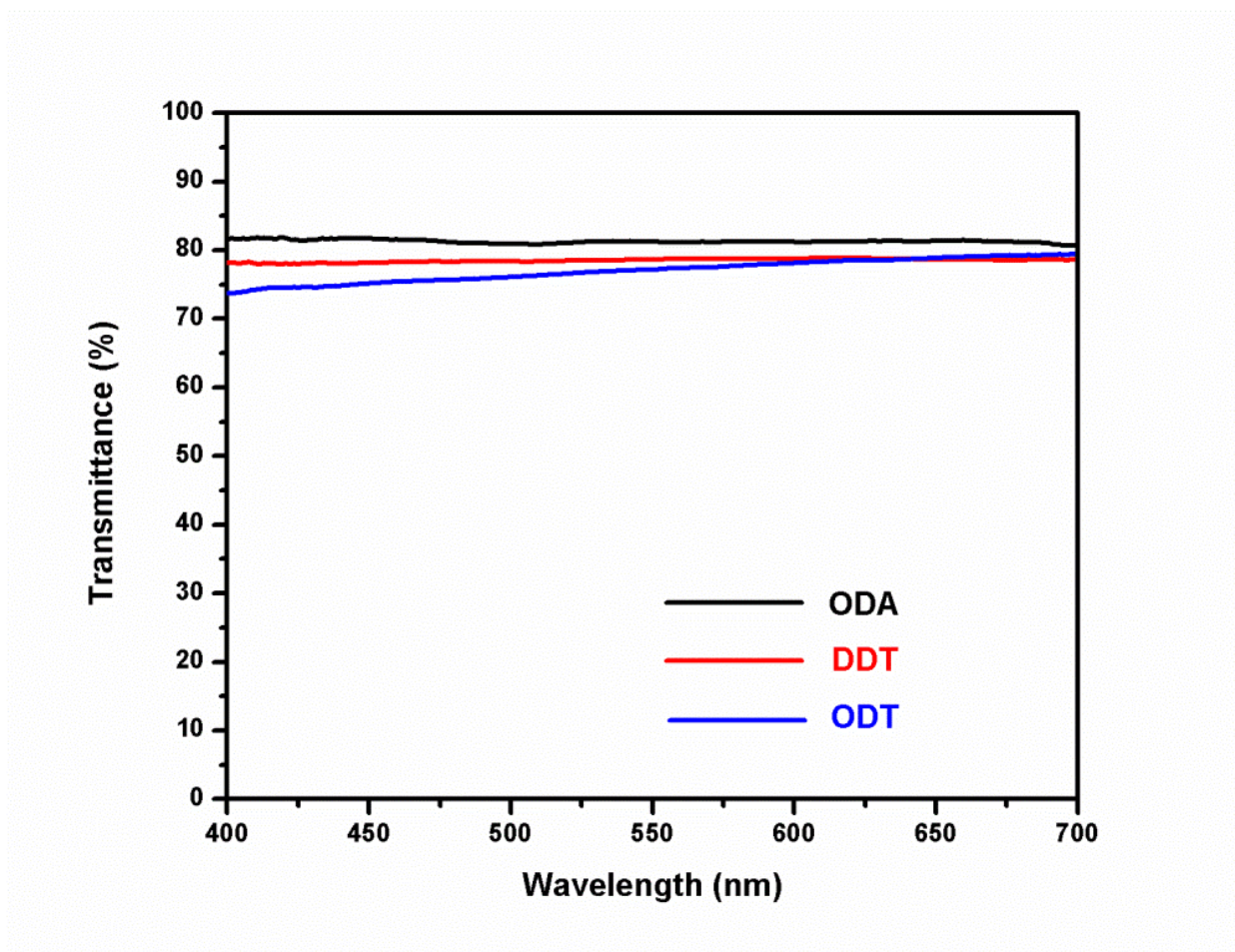


Fig. S3 UV-Vis spectra for the Cu NWs coated with ODA, DDT or ODT on glass slides.