

### Supporting Information

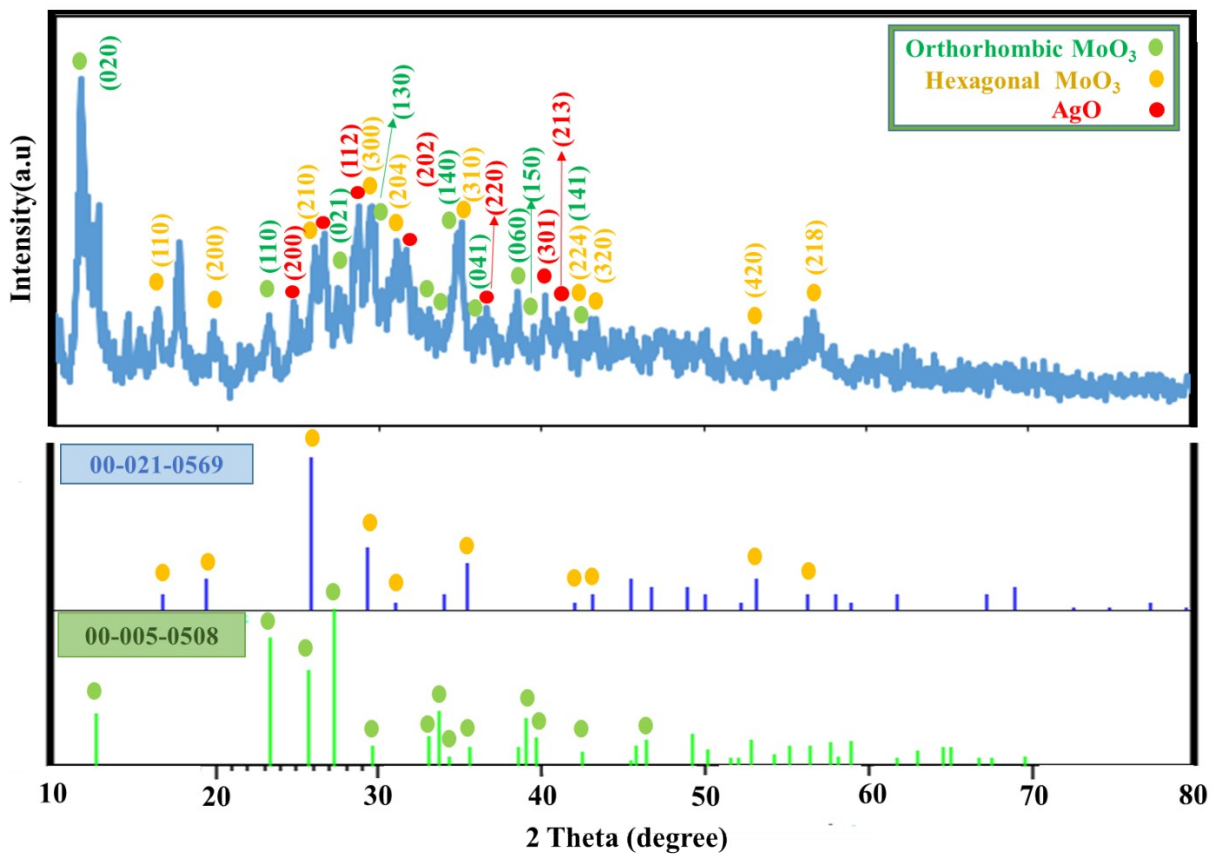
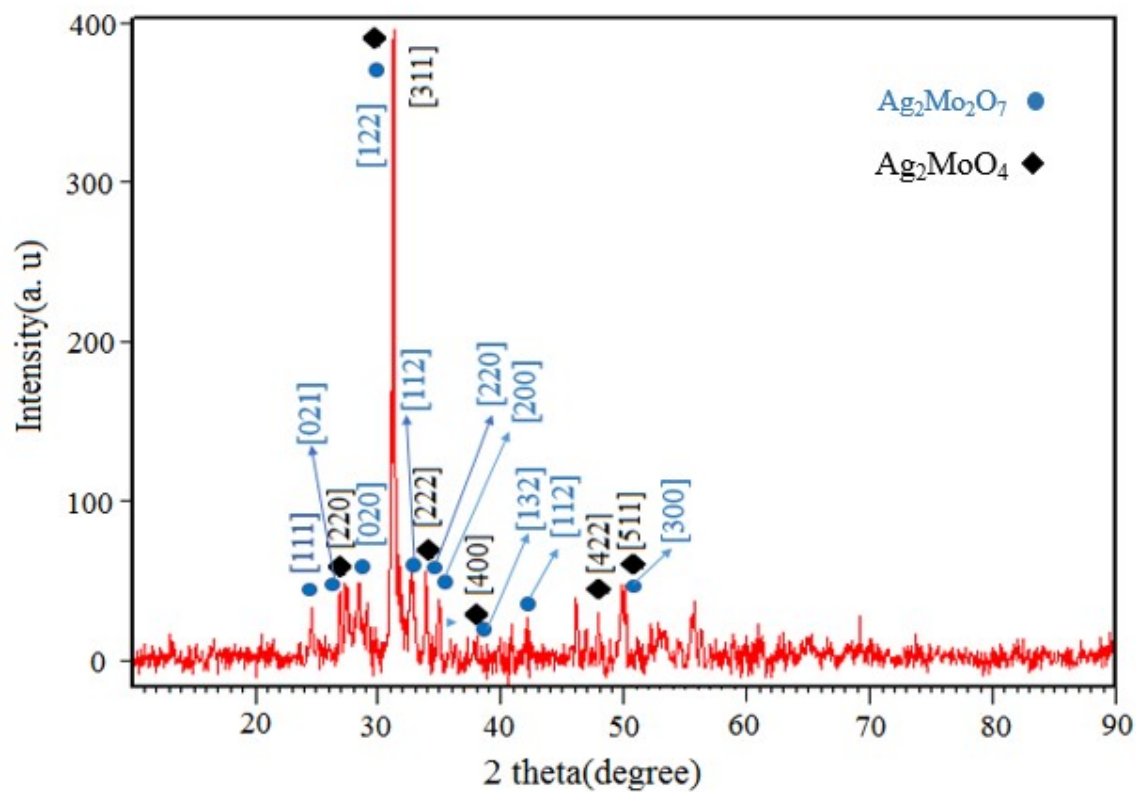
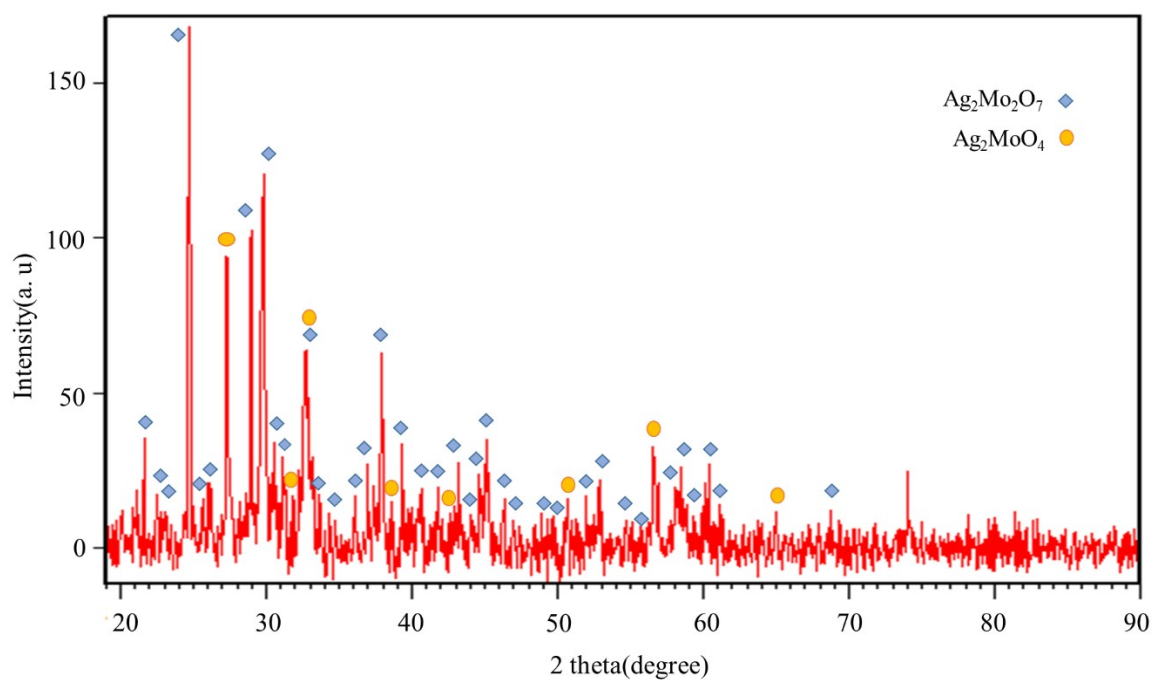


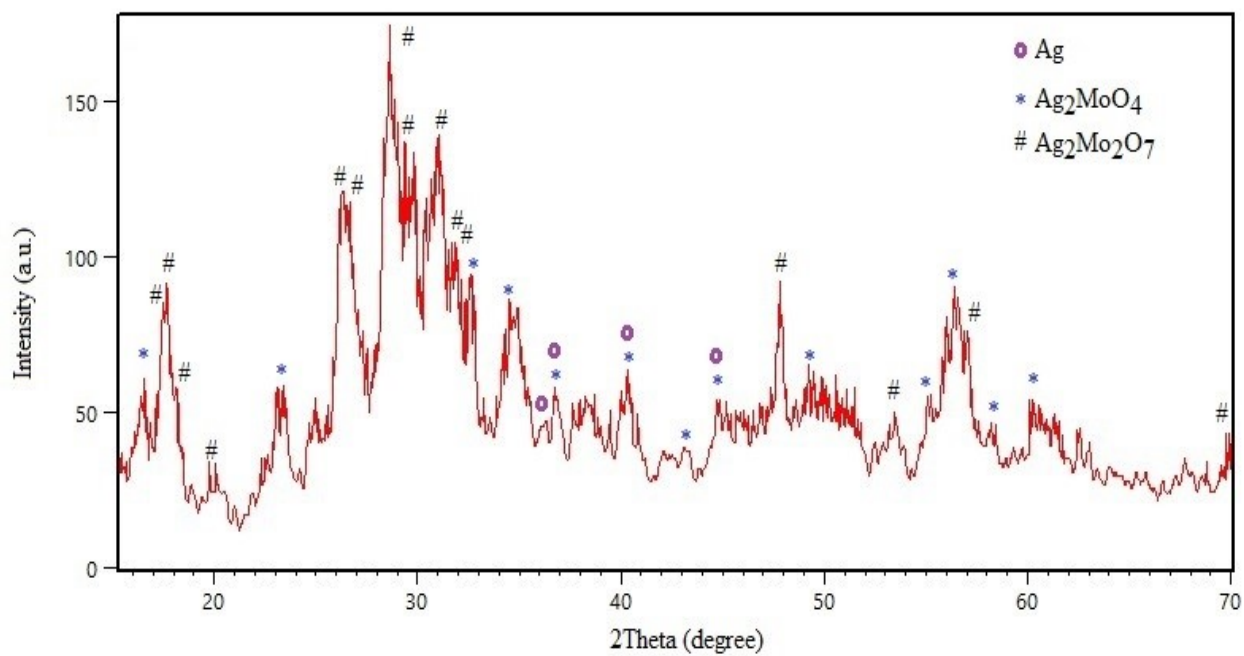
Figure S1. XRD pattern of synthesized cryogels with 1:1 Ag/Mo molar ratio.



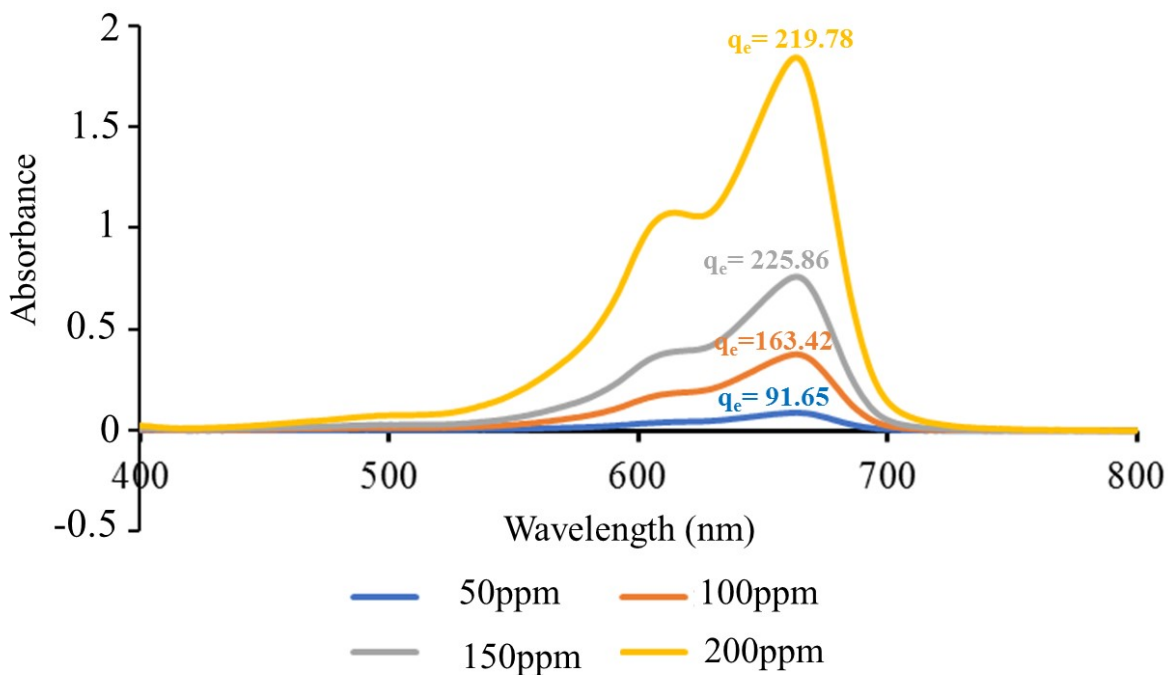
**Fig.S2** XRD pattern of a Two-phase mixture powder of  $\text{Ag}_2\text{Mo}_2\text{O}_7/\text{Ag}_2\text{MoO}_4$  synthesized under hydrothermal condition.



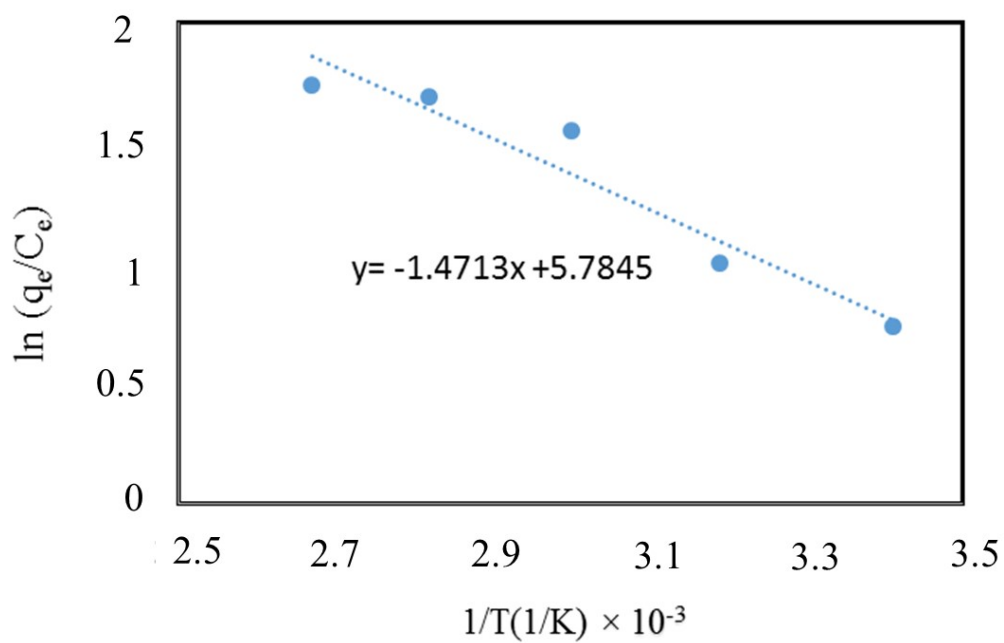
**Fig.S3** XRD pattern of black powder of  $\text{Ag}_2\text{Mo}_2\text{O}_7/\text{Ag}_2\text{MoO}_4$  synthesized under sonication in DMSO.



**Fig.S4** XRD pattern of composite cryogel synthesized under sonication in  $\text{H}_2\text{O}/\text{DMSO}$ .



**Fig.S5** Absorption spectra of different concentration of MB solution in the presence of SMSSO cryogel under dark conditions.



**Fig.S6** Van't Hoff equation's plot of  $1/T$  vs.  $\ln K$  for prepared cryogel.