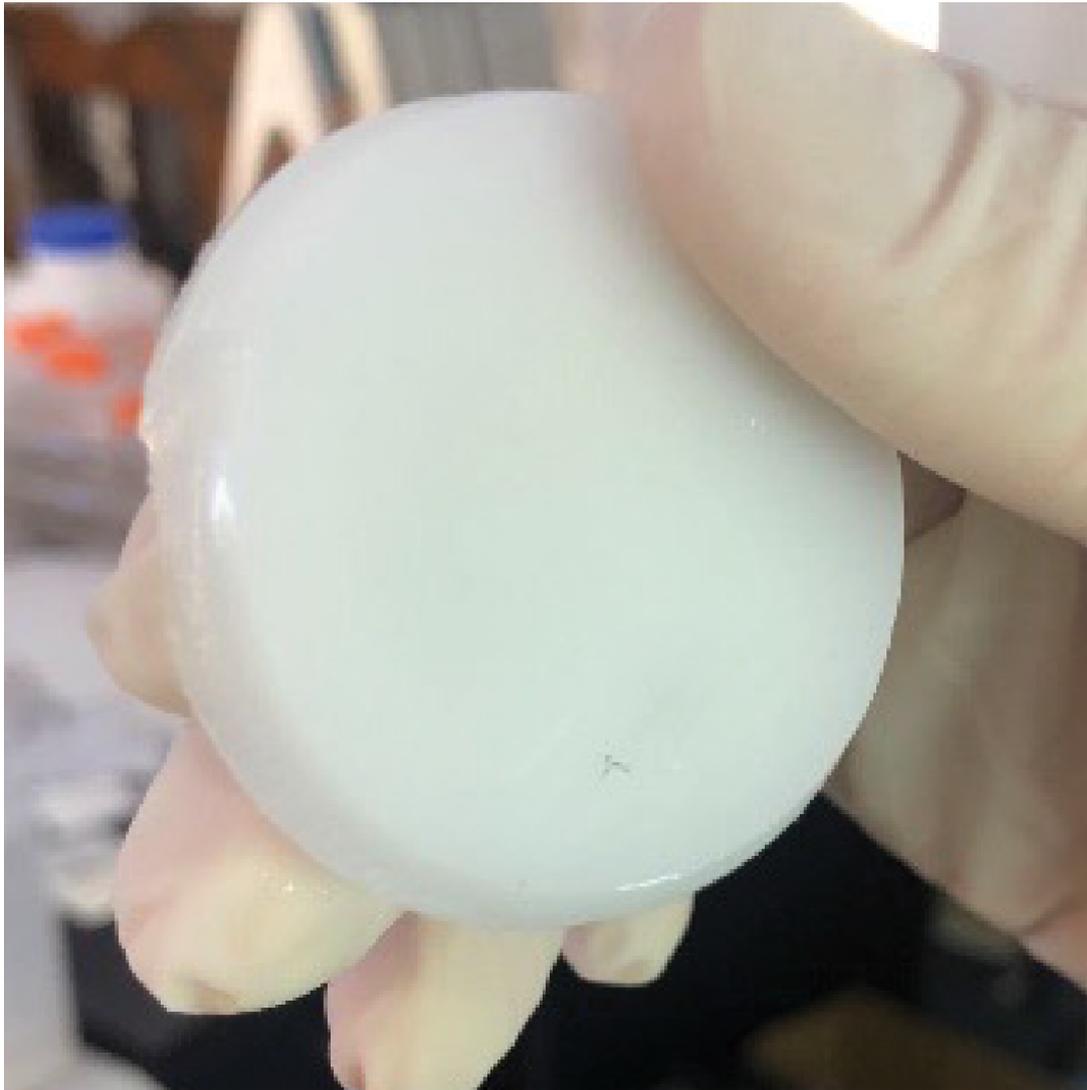
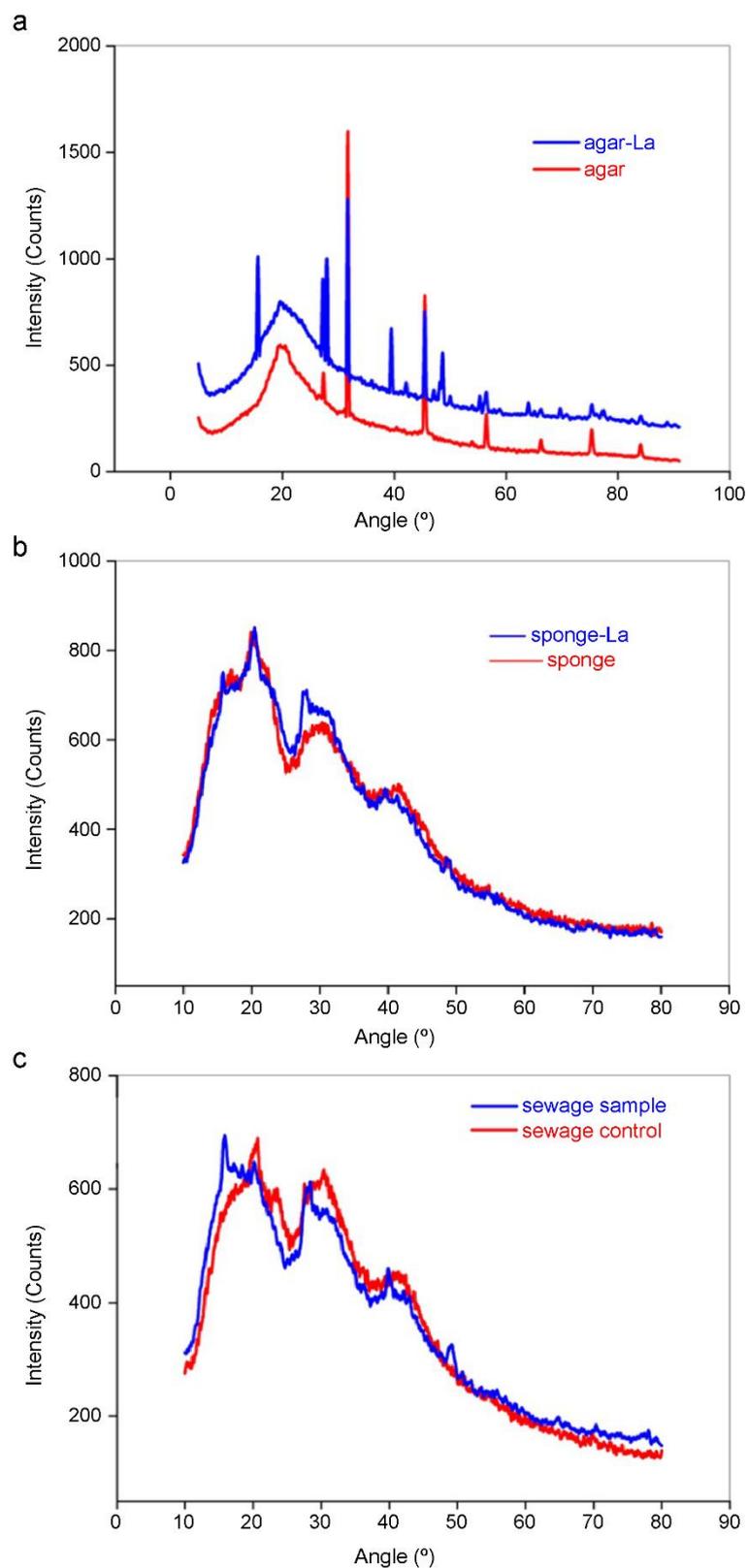


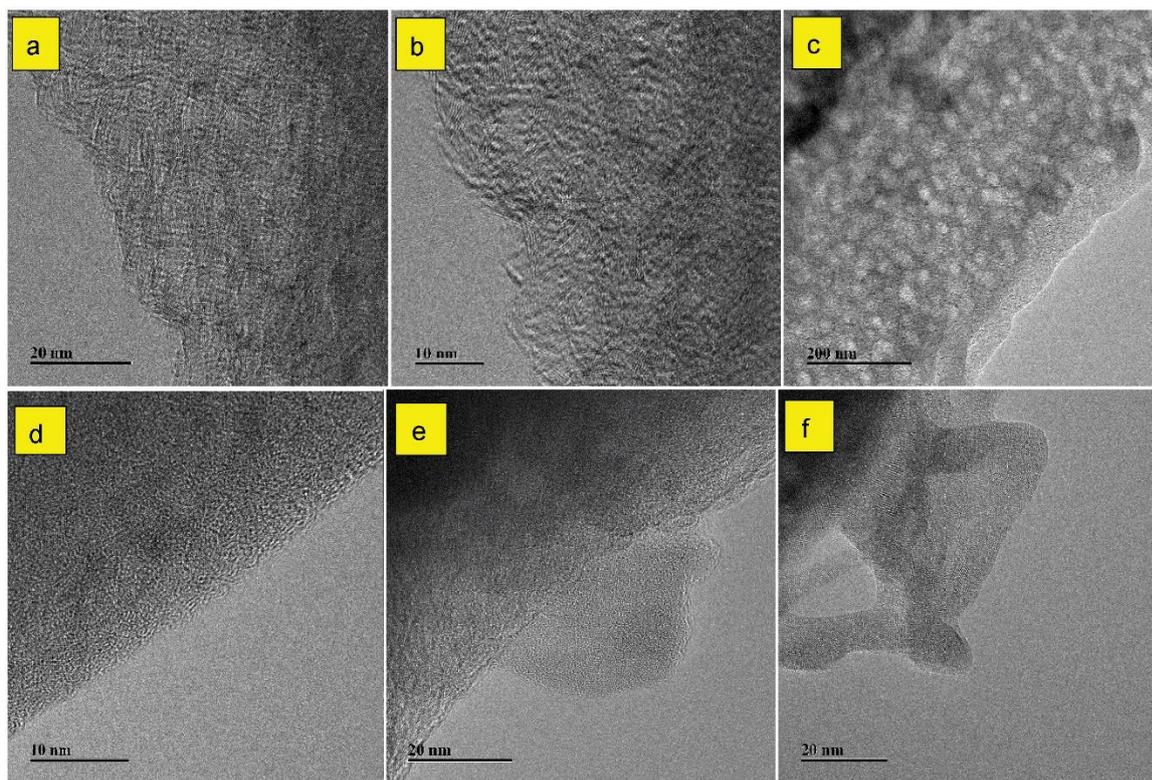
## Supplementary Materials



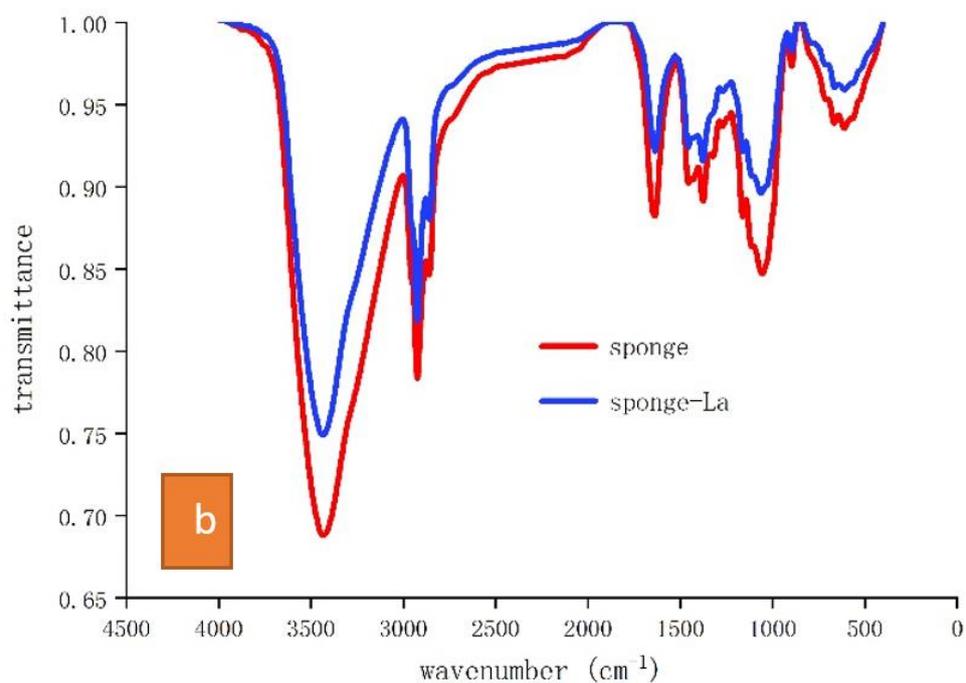
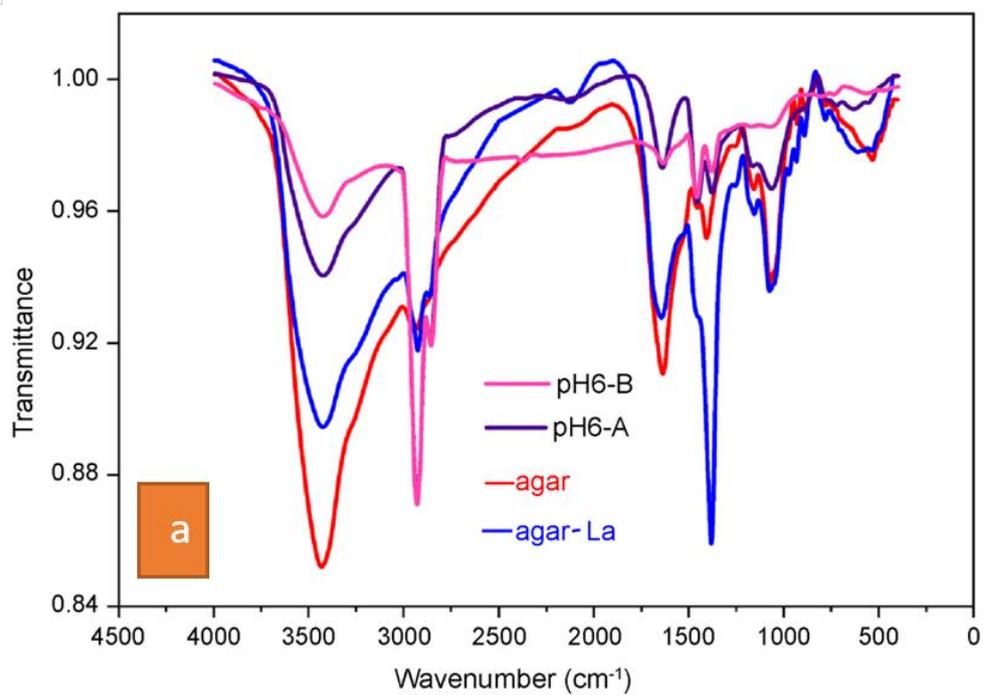
**Supplementary Figure S1.** Photograph of the prepared agar-La membrane showing its sheer and shiny appearance.



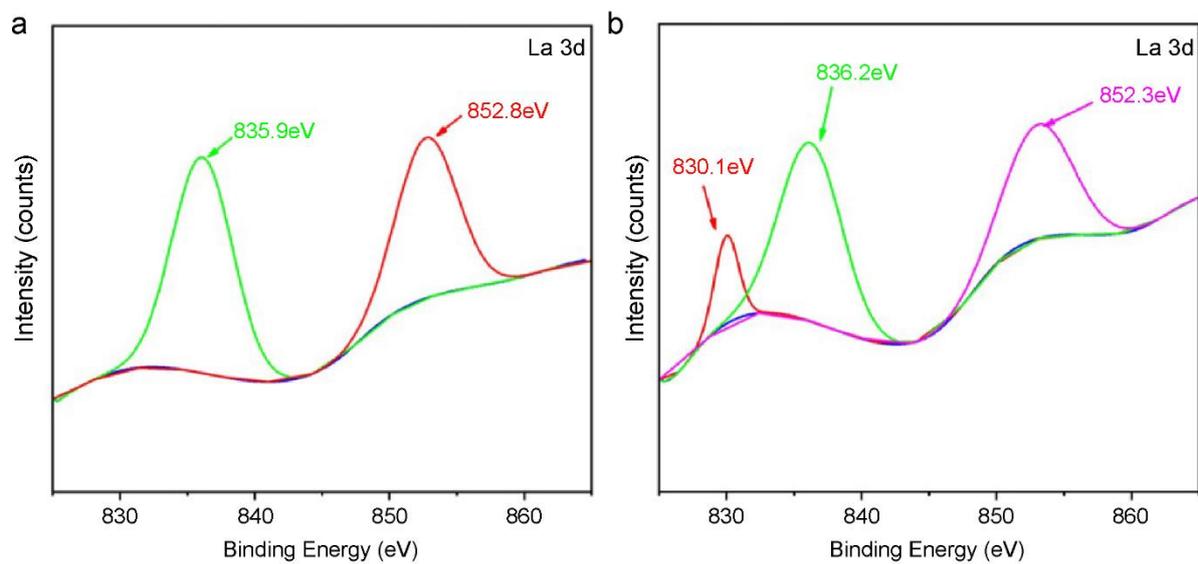
**Supplementary Figure S2.** X-ray diffraction (XRD) spectra of agar-La (a), sponge-La (b), and sponge-La in sewage treatment (c) compared with the controls.



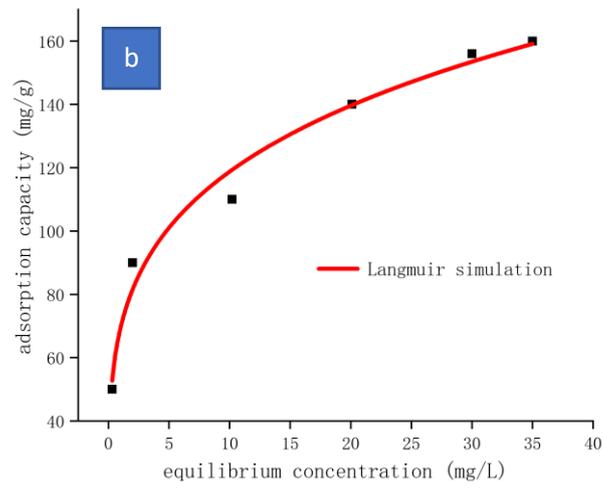
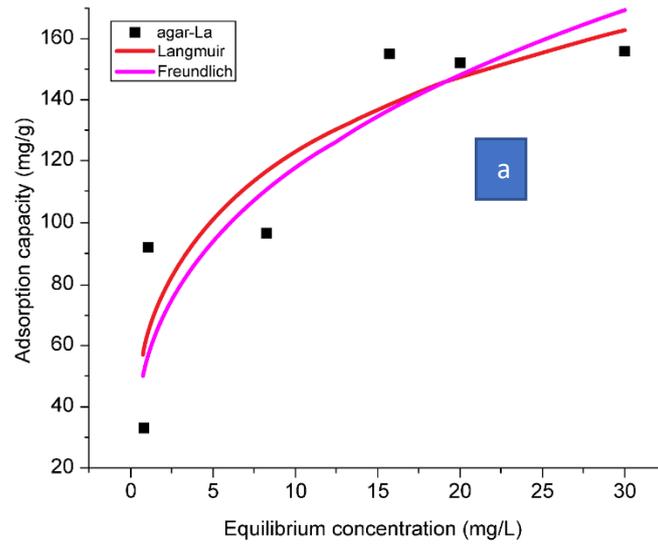
**Supplementary Figure S3.** Transmission electron microscopy (TEM) images of agar-La (a and d), pure agar (b and e), sponge (c), and sponge-La (f).



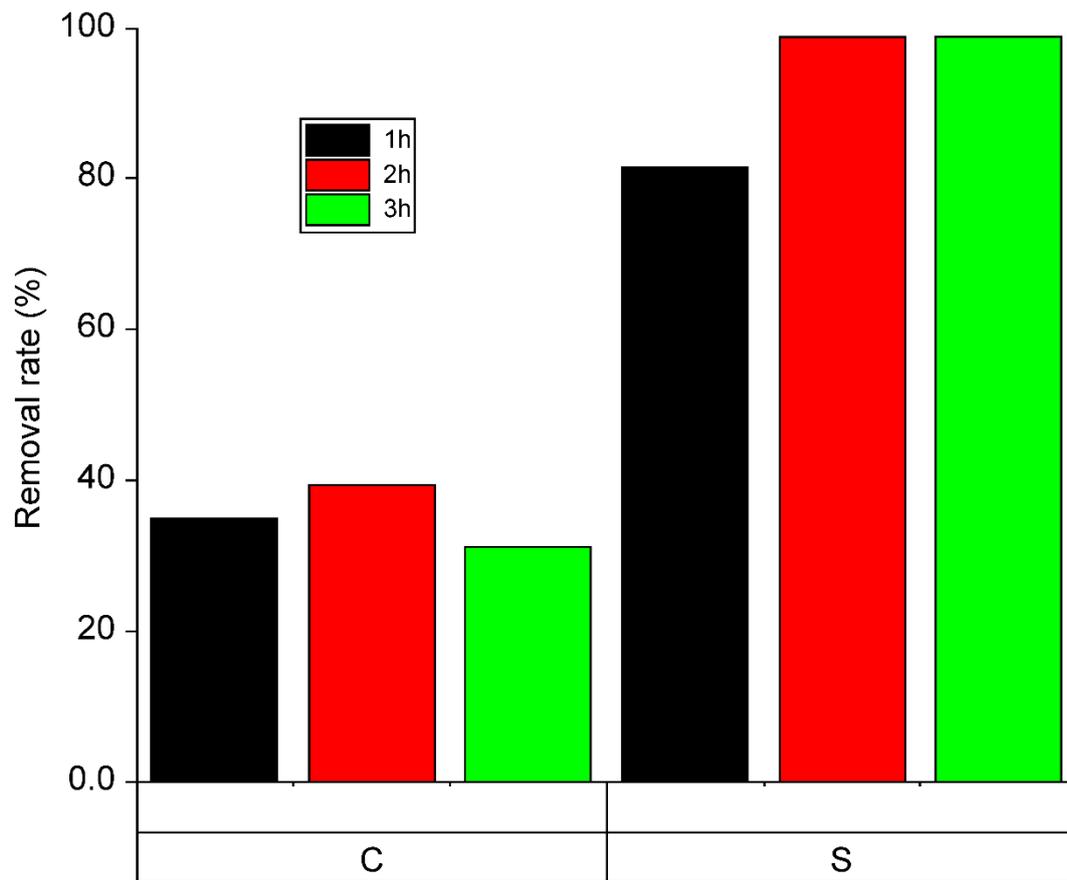
**Supplementary Figure S4.** Fourier transfer infrared spectroscopy (FTIR) spectra of agar, agar-La, and samples from pH study: pH6-A, and pH6-B (a); FTIR spectra of sponge and sponge-La (b).



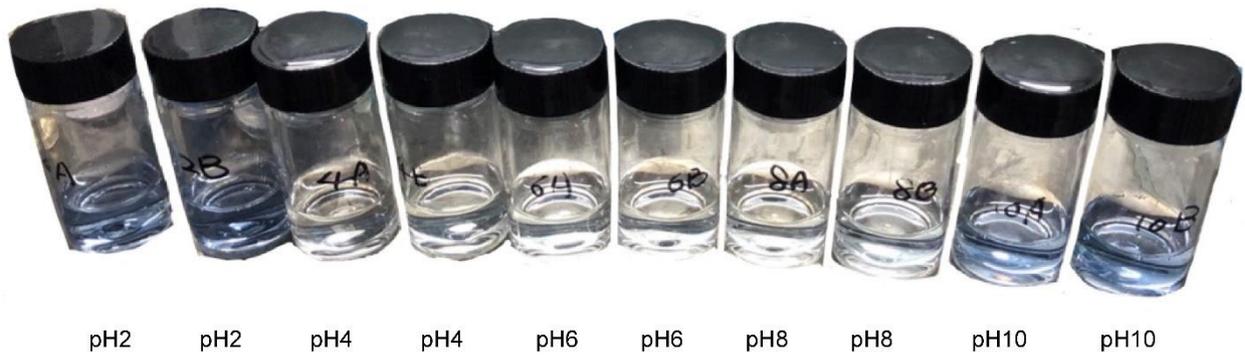
**Supplementary Figure S5.** X-ray photoelectron spectroscopy (XPS) images of agar-La spectra at initial concentrations of 5 mg/L (a) and 10 mg/L (b).



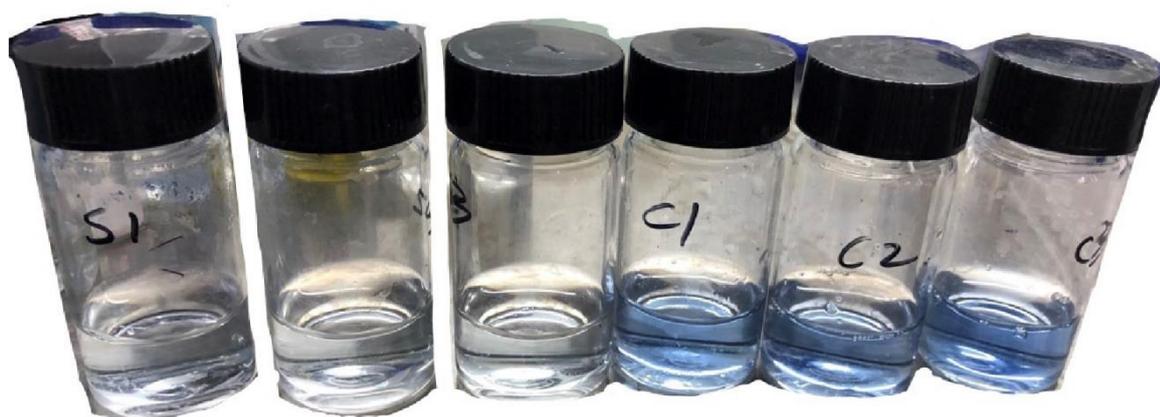
**Supplementary Figure S6.** Adsorption isotherms of agar-La (a) and sponge-La (b).



**Supplementary Figure S7.** Removal rate of control (C) and sponge-La sample (S) at different time intervals (black: 1 h; red: 3 h; and green: 4 h) from the start of the adsorption process.



**Supplementary Figure S8.** Color distinction among the water samples at different pH levels when using agar-La as the sorbent.



**Supplementary Figure S9.** Color differentiation after 1 h of adsorption using the ammonium-molybdate method. The clear initial three samples with sponge-La indicate the rapid sorption process.