Electronic Supplementary Information

Alkaline lignin extracted from furfural residues for novel pH-responsive Pickering emulsions and its recyclable polymerization

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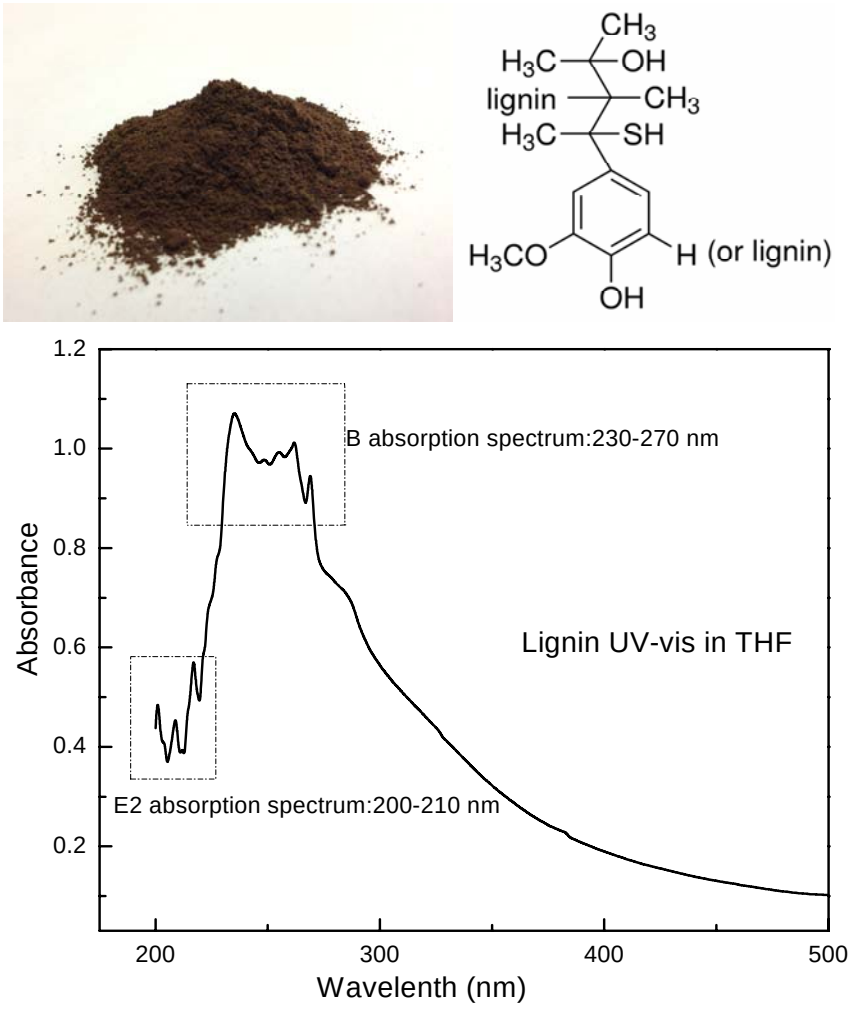

Fig. S1 Photograph of the final product lignin and its UV-VIS tested in THF.

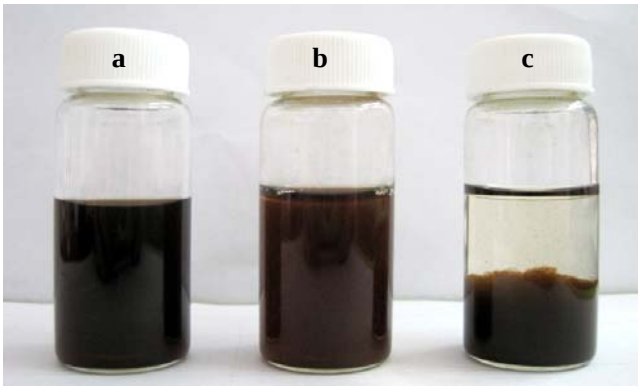

Fig. S2 Photographs of samples: (a) at pH=11, (b) lignin colloidal particles suspension at pH=3, (c) after 10 minutes of standing, lignin colloidal particles formed aggregates.

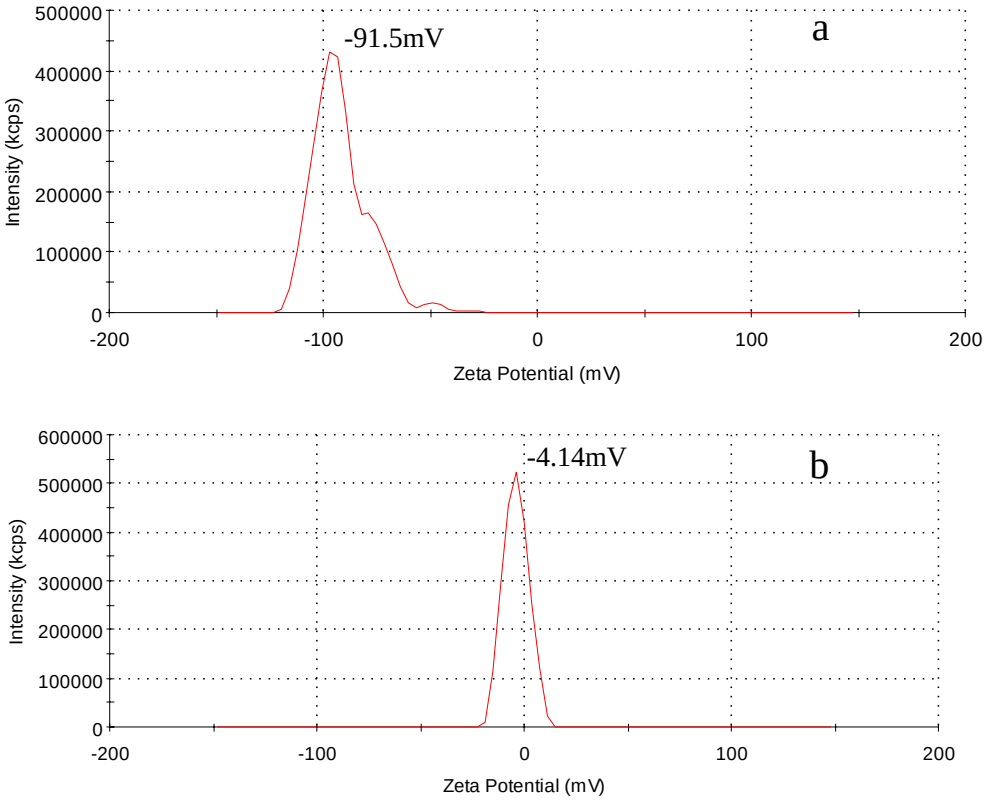

Fig. S3 Zeta potential of lignin solution: (a) -91.5 mV at pH=11, (b) -4.14 mV at pH =3.

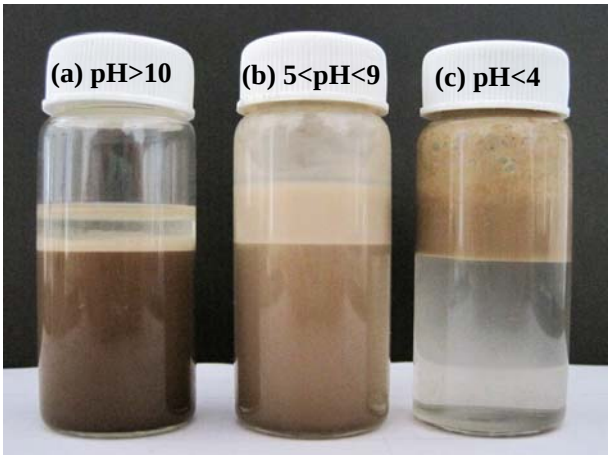

Fig. S4 Photographs of vials containing styrene and water with 0.1 wt% lignin at (a) pH greater than 10, (b) pH between 5 and 9, (c) pH less than 4. The styrene to aqueous phase ratio is 1:4.

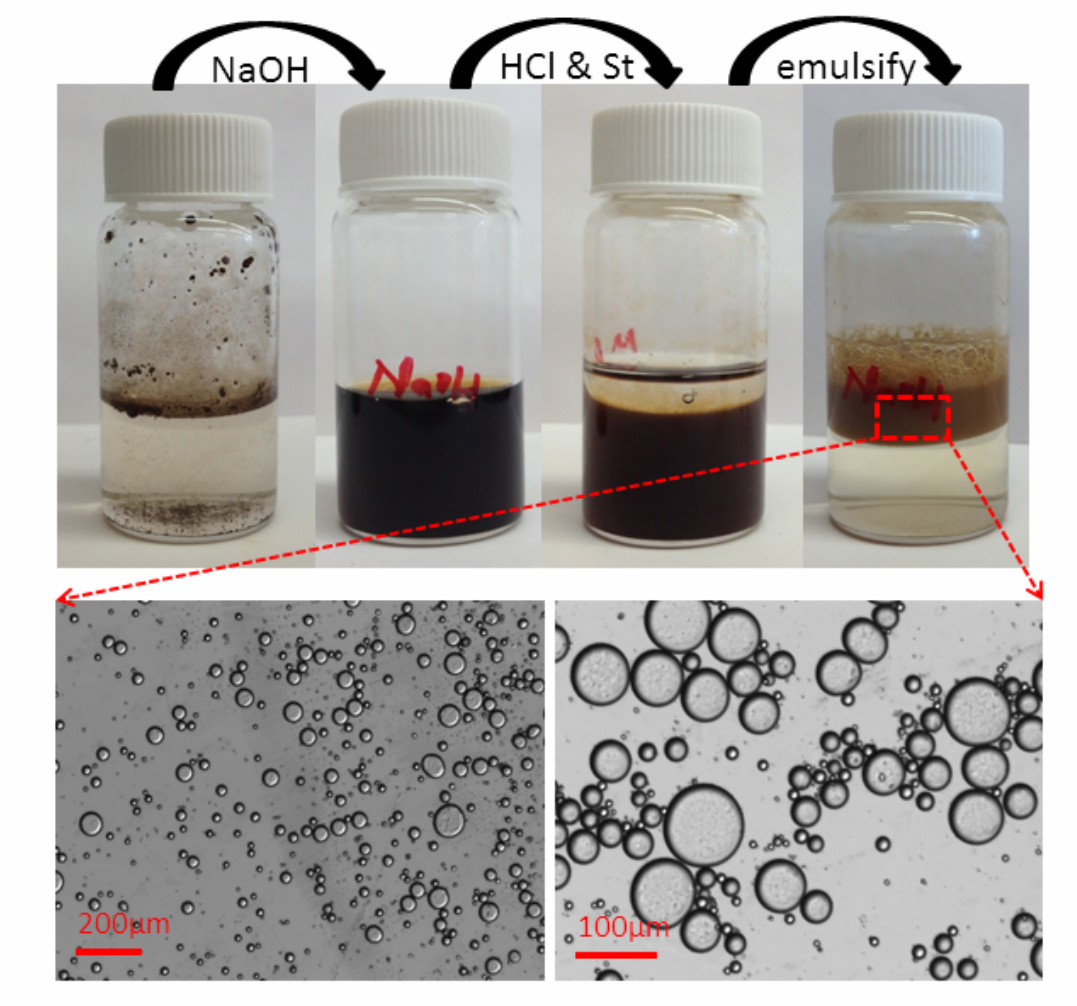

Fig. S5 Pickering emulsion stabilized by lignin colloidal particles using NaOH/HCl system.

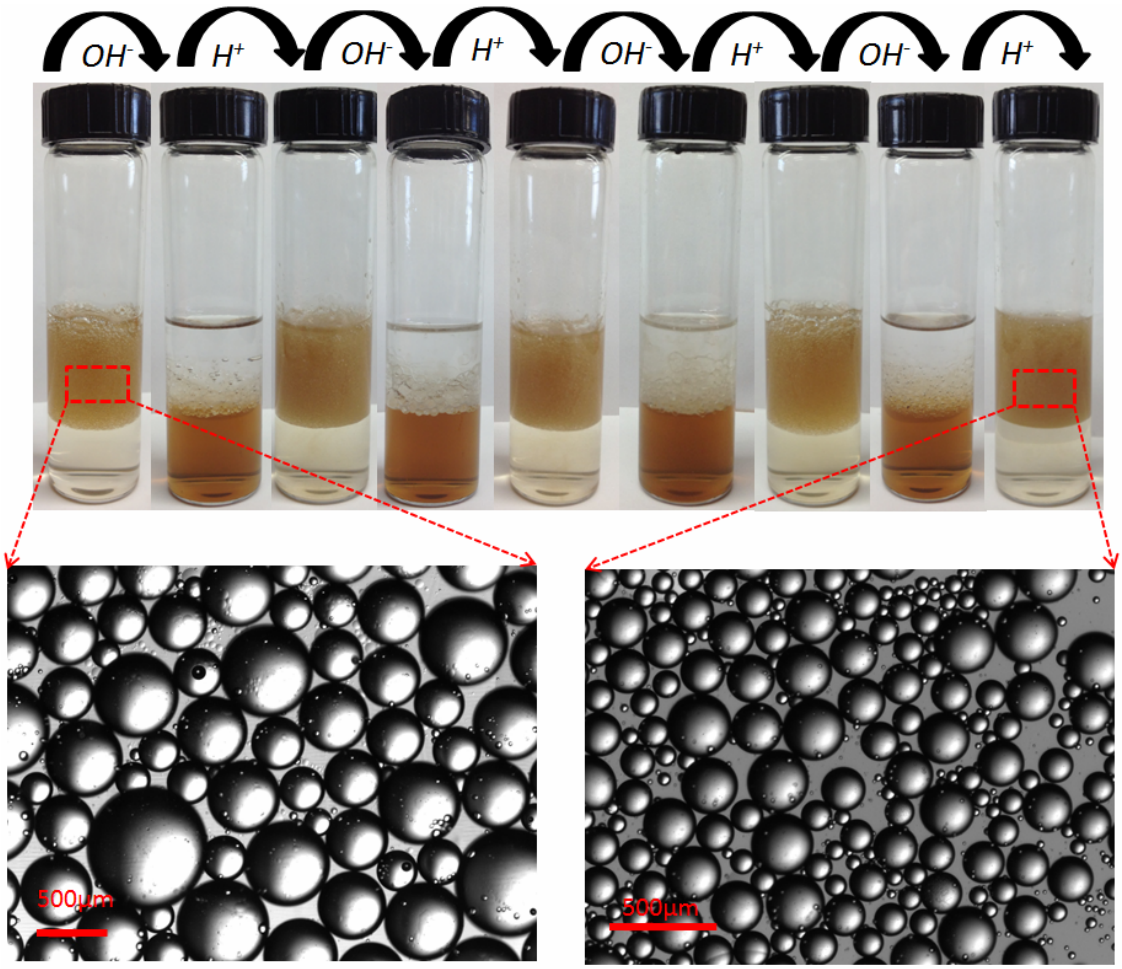

Fig. S6 pH responsive Pickering emulsion stabilized by lignin colloidal particles. Five cycles of the emulsification-demulsification process were observed.

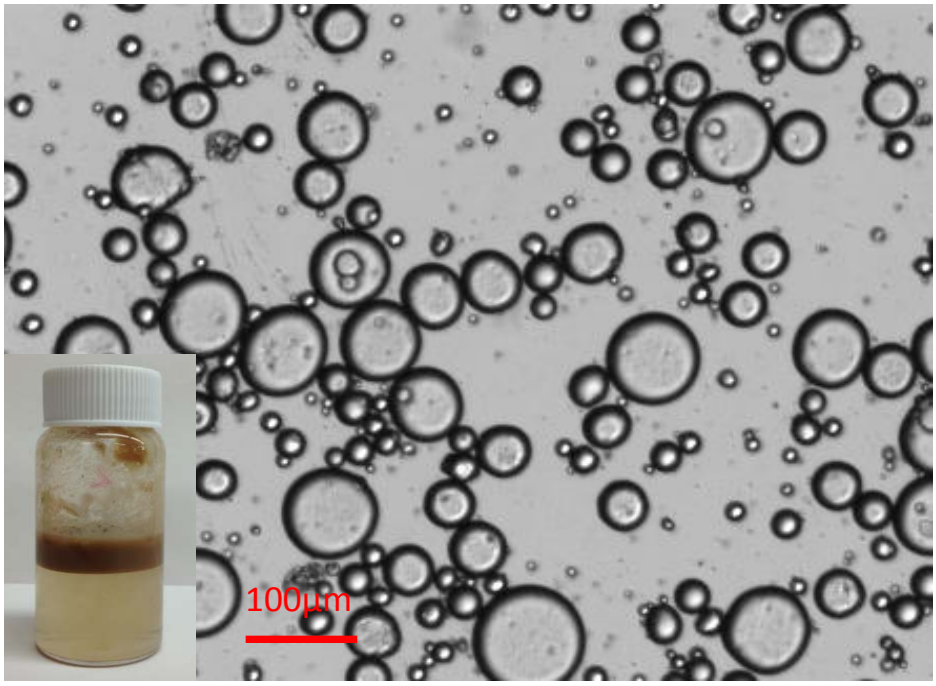

Fig. S7 Optical microscopy image of a lignin stabilized emulsion after standing 6 months. The insertion is a digital photograph of this emulsion.

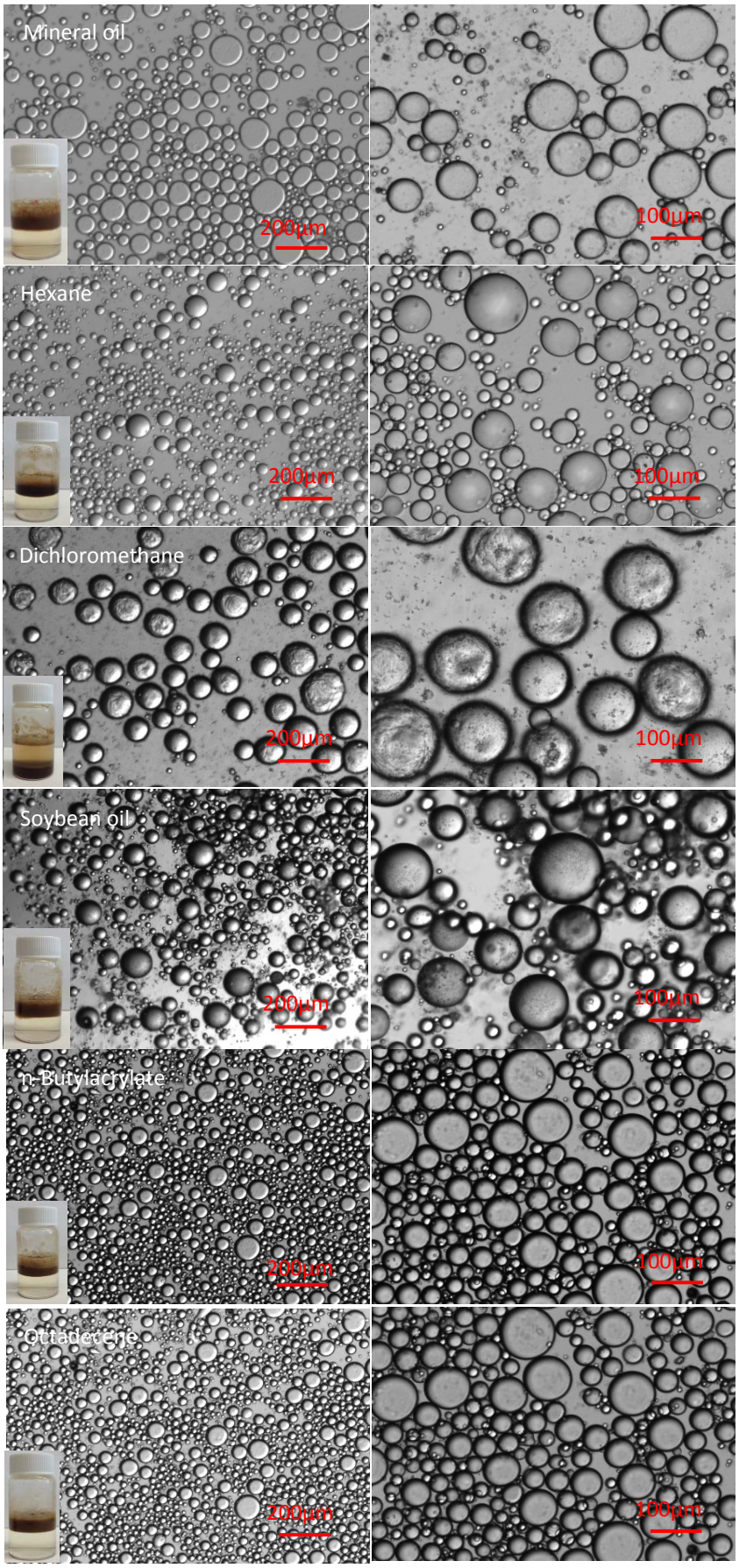

Fig. S8 Optical microscopy images of lignin stabilized emulsions prepared using diffetent oils. The lignin concentrations is 0.1 wt %, and oil-to-water ratio is 1:4.

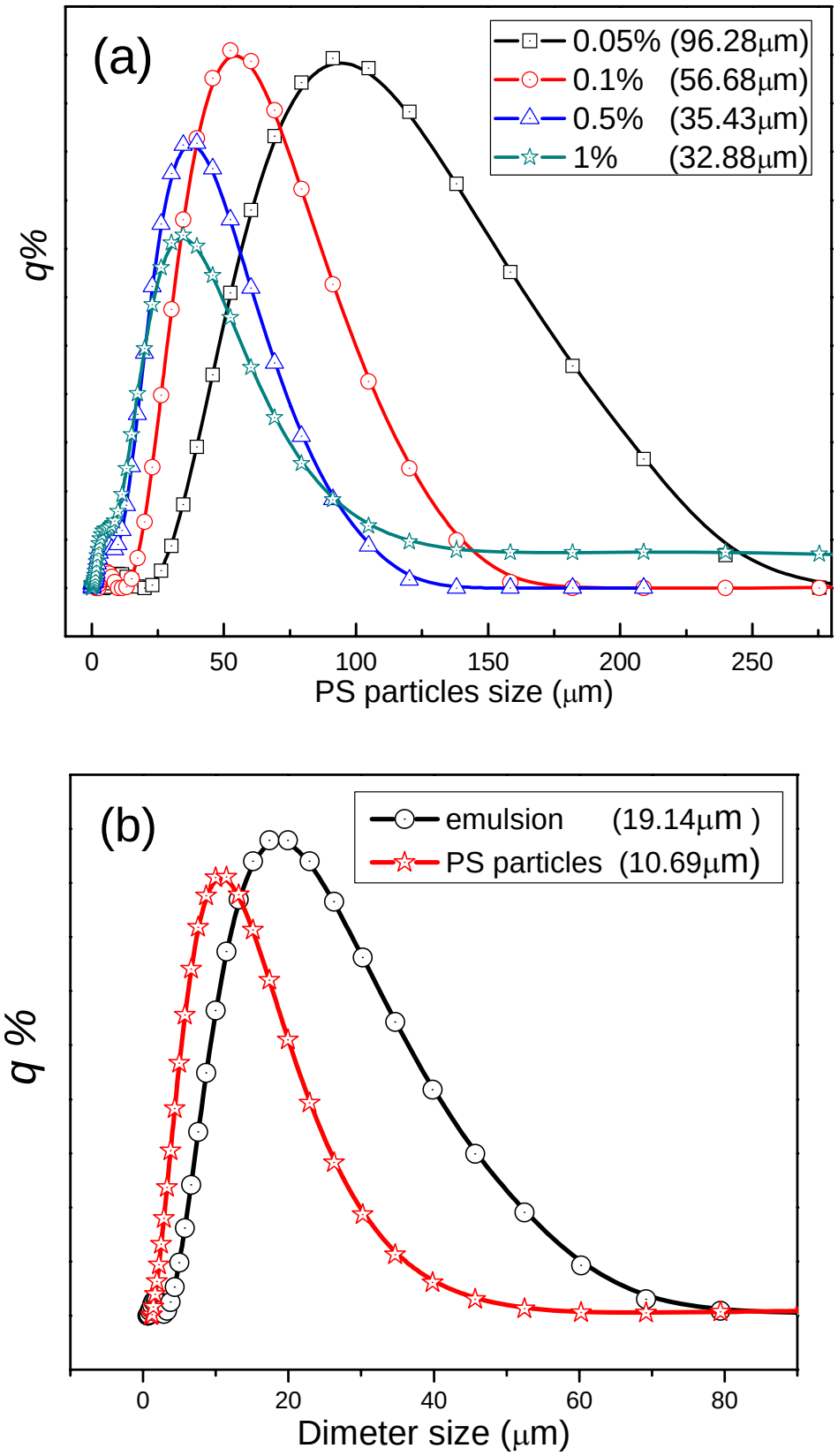

Fig. S9 (a) the size distribution graph of PS particles prepared by different lignin content stabilized Pickering emulsion. (b) The size distribution graph of emulsion and PS particles prepared by Tween stabilized traditional emulsion.

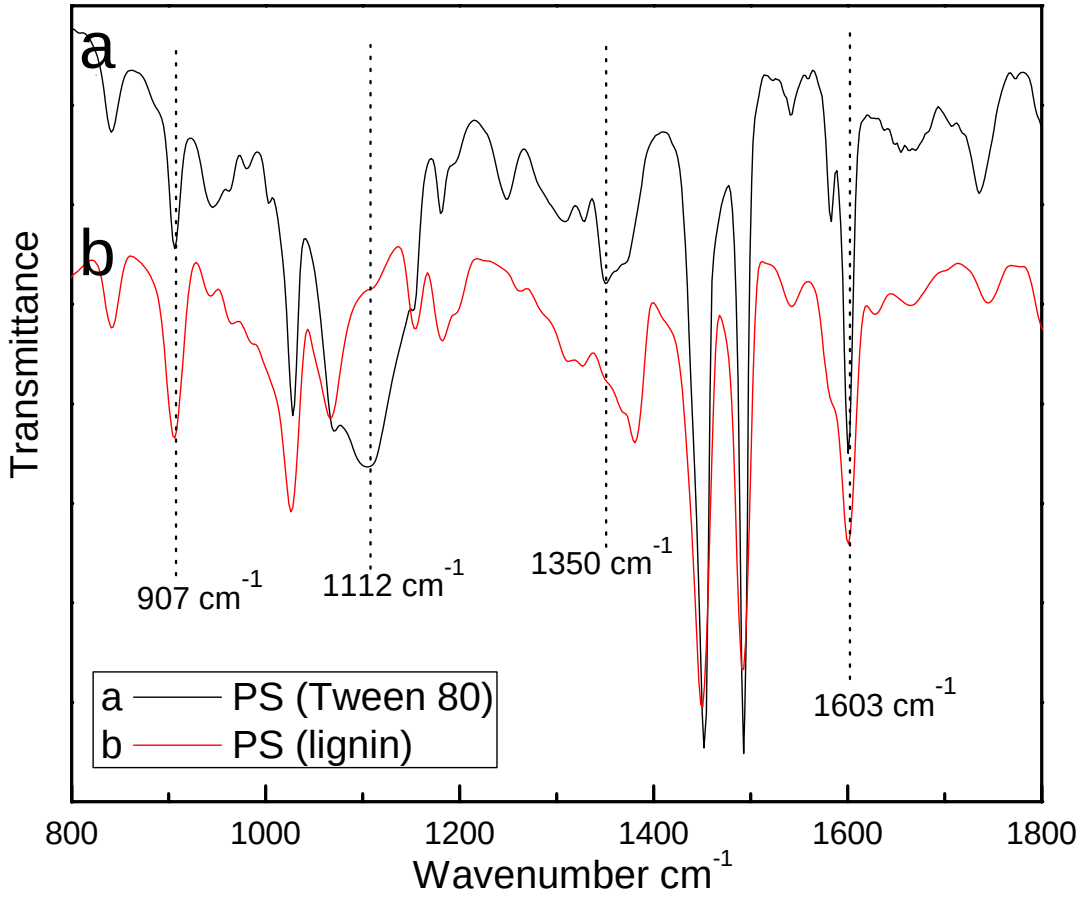

Fig. S10 FT-IR spectra for PS particles prepared by lignin stabilized Pickering emulsion system and Tween 80 stabilized traditional emulsion system.

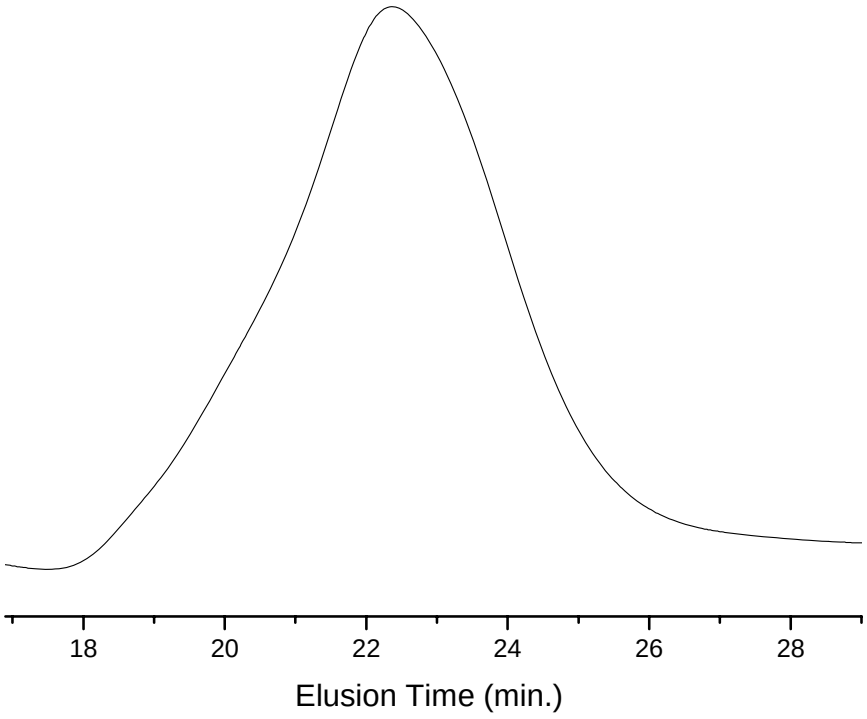

Fig. S11 GPC of the resultant PS microparticles.

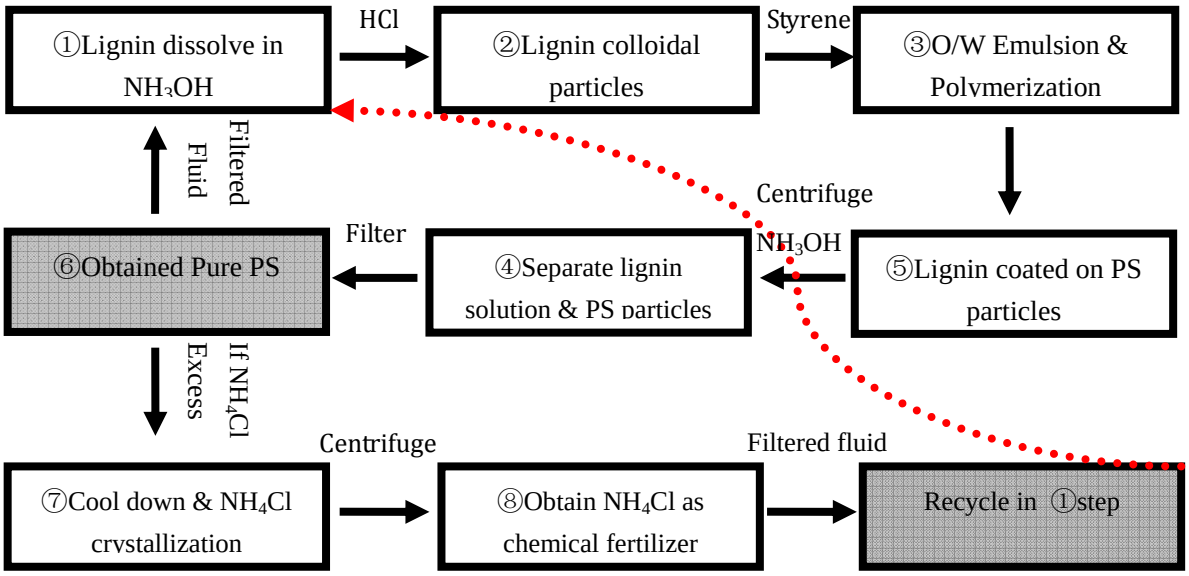

Fig. S12 Schematic of the recycle route for emulsion polymerization.