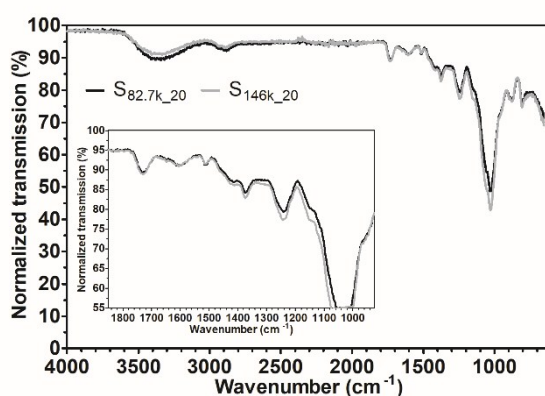


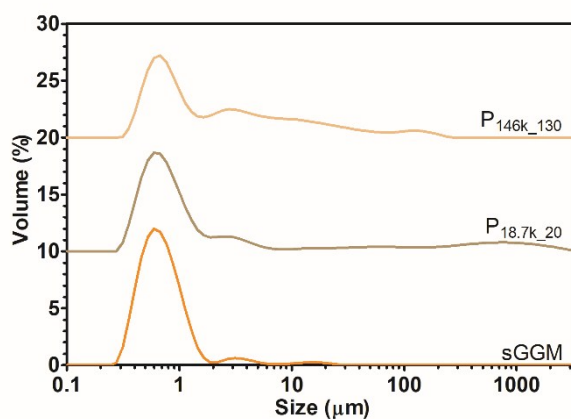
## Supporting information

### Centrifugal fractionation of softwood extracts improves biorefinery workflow and yields functional emulsifiers

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**Fig. S1** FT-IR transmission spectra for supernatants obtained after ultracentrifugation S<sub>82.7k\_20</sub> (black) and S<sub>146k\_20</sub> (gray). Magnification of spectra between 1850 and 925 cm<sup>-1</sup> is shown as an inset.



**Fig. S2** Volume-based particle size distribution for sGGM (orange), P<sub>18.7k\_20</sub> and P<sub>146k\_130</sub> (brown). Color darkening indicates a reduction of centrifugation force and time applied. Curves were shifted vertically for clarity.