Supplementary Information (SI) for Analytical Methods.

Electronic Supporting Information

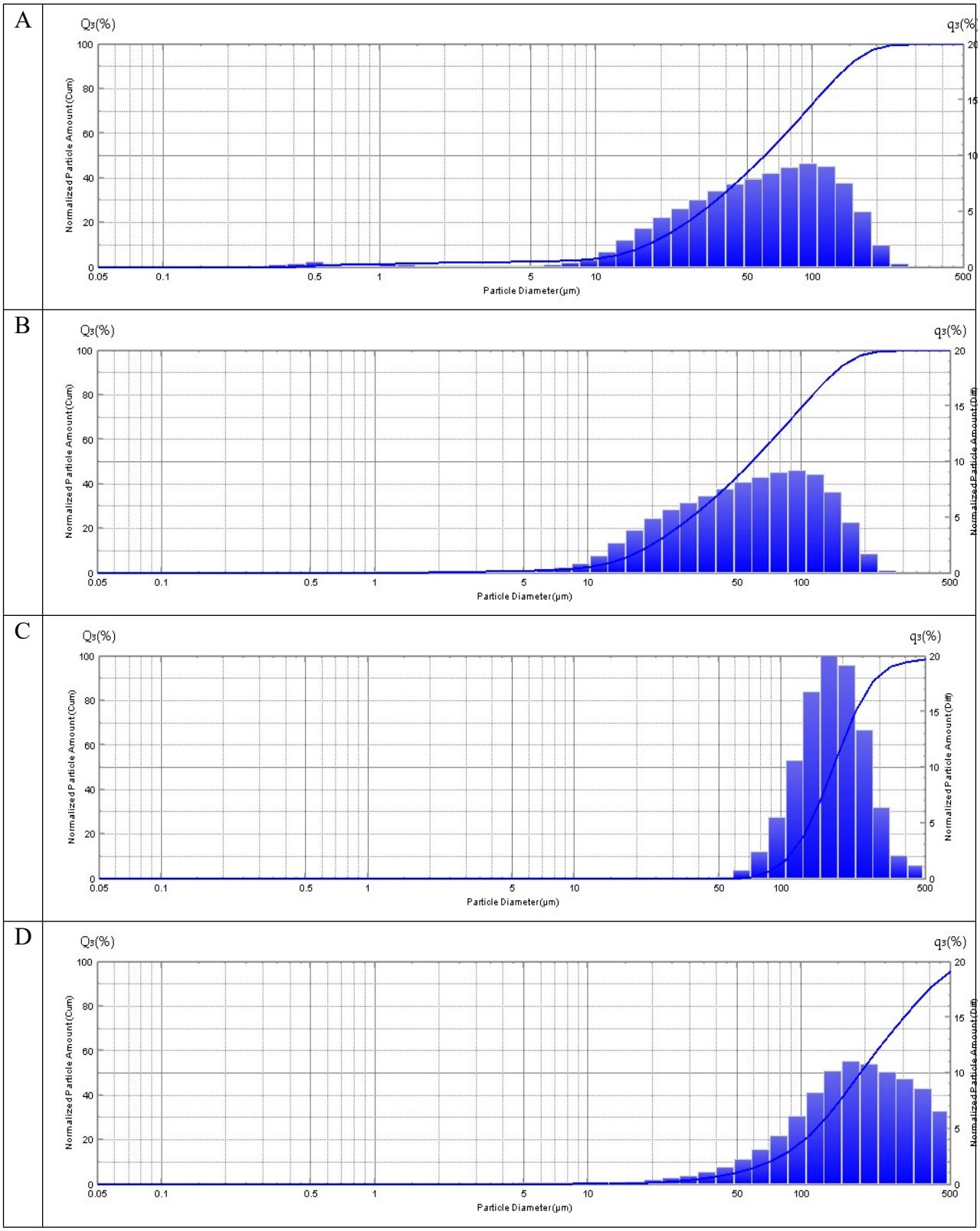

Figure S1. Size distribution histograms for MPs isolated from brand #1 in the peelings category were measured at 0.1 (A) and 0.25 (B) mg/mL; brand #5 in the hand paste category at 5 mg/mL (C); and brand #6 in the hand paste category at 0.25 mg/mL (D).

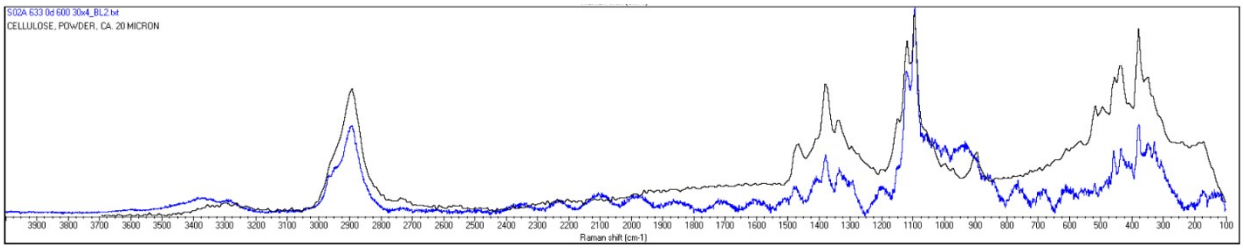

Figure S2. Overlaid Raman spectra of primary MPs from the brand #1 in the peelings category with cellulose powder standard, ca. 20 µm demonstrating the highest matching degree (81.4 %).

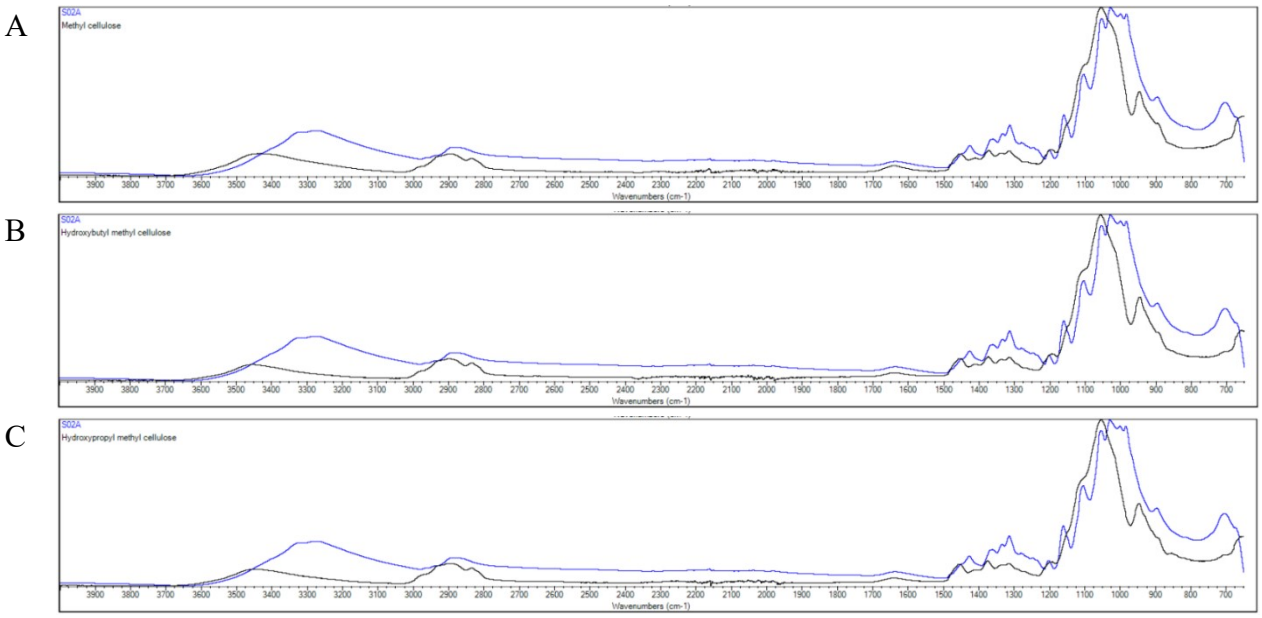

Figure S3. Overlaid FTIR spectra of primary MPs from the brand #1 in the peelings category with three cellulose derivatives (top: methyl cellulose; middle: hydroxybutyl methyl cellulose; bottom: hydroxypropyl methyl cellulose) demonstrating best peak by peak matching.

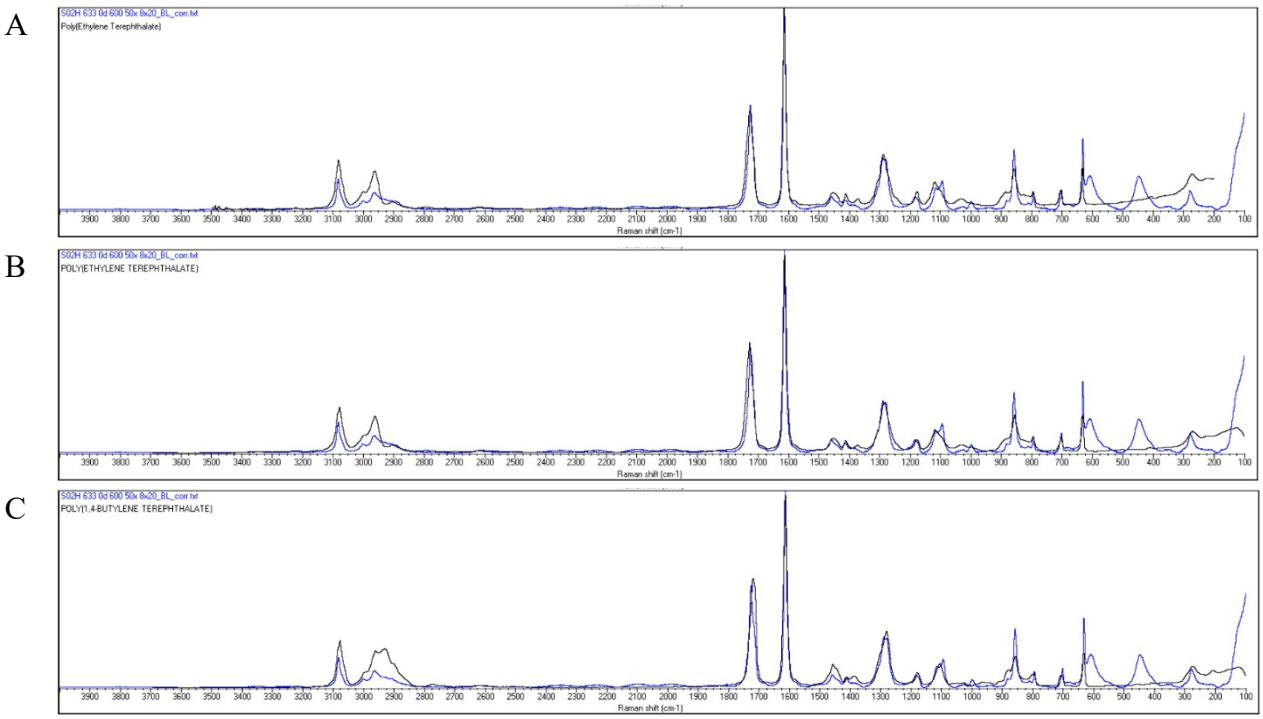

Figure S4. Overlaid Raman spectra of primary MPs from the brand #7 in the glitter gels category with PET and PBT standards demonstrating the highest matching degrees (93.6 (A) and 92.3 % (B)) matching degree with PET standards, and 87.6 (C) matching degree with PBT standards).

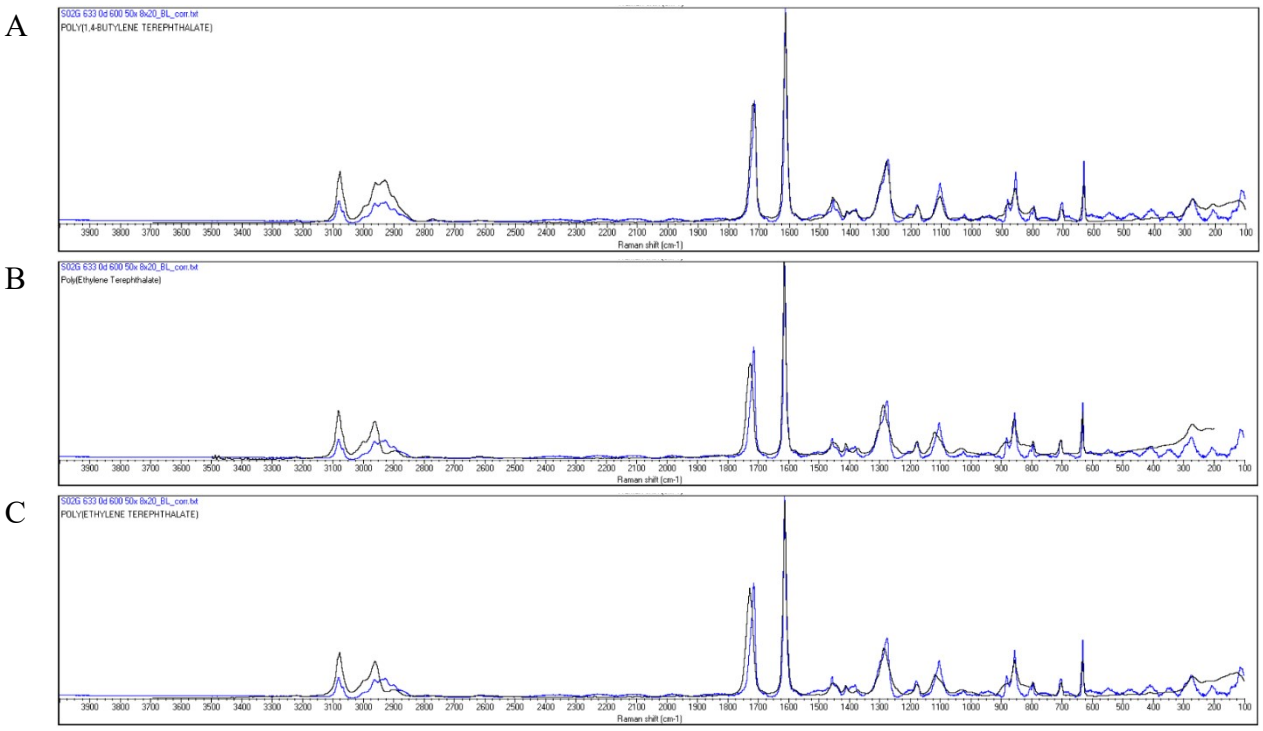

Figure S5. Overlaid Raman spectra of primary MPs from the brand #8 in the glitter gels category with PBT and PET standards demonstrating the highest matching degree (96.2 %; A) with PBT standard; matching degrees with PET standards are 84.7 (B) and 84.3 % (C).

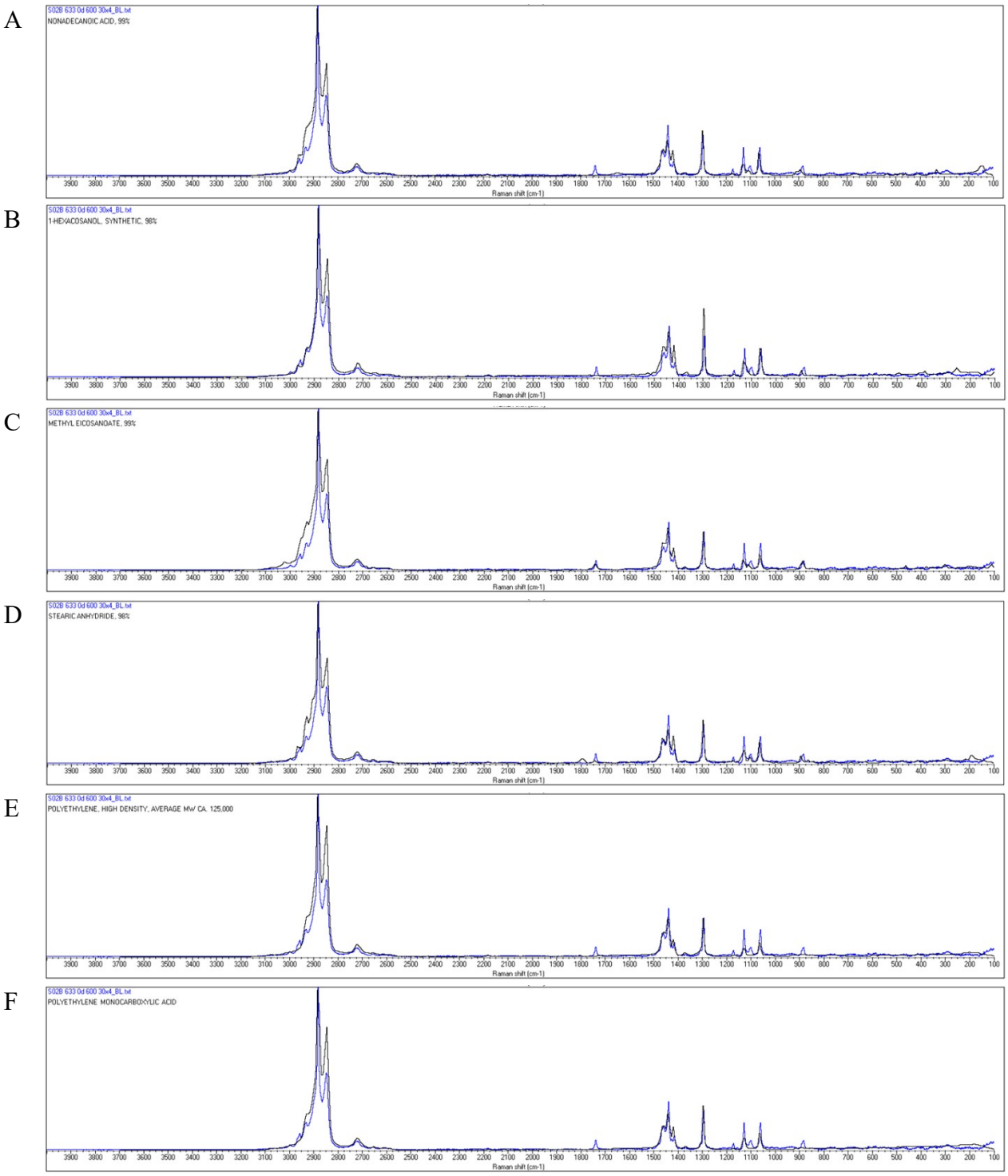

Figure S6. Overlaid Raman spectra of the mixed precipitate from brand #3 in the scrubs category with the representative examples of standards demonstrating high matching degrees. A: nonadecanoic acid (95.4 % matching); B: 1-hexacosanol, synthetic (95.2 % matching); C: methyl eicosanoate (95.2 % matching); D: stearic anhydride (94.9 % matching); E: polyethylene, high density, average M_w ca. 125000 (94.2 % matching); F: polyethylene monocarboxylic acid (93.9 % matching).

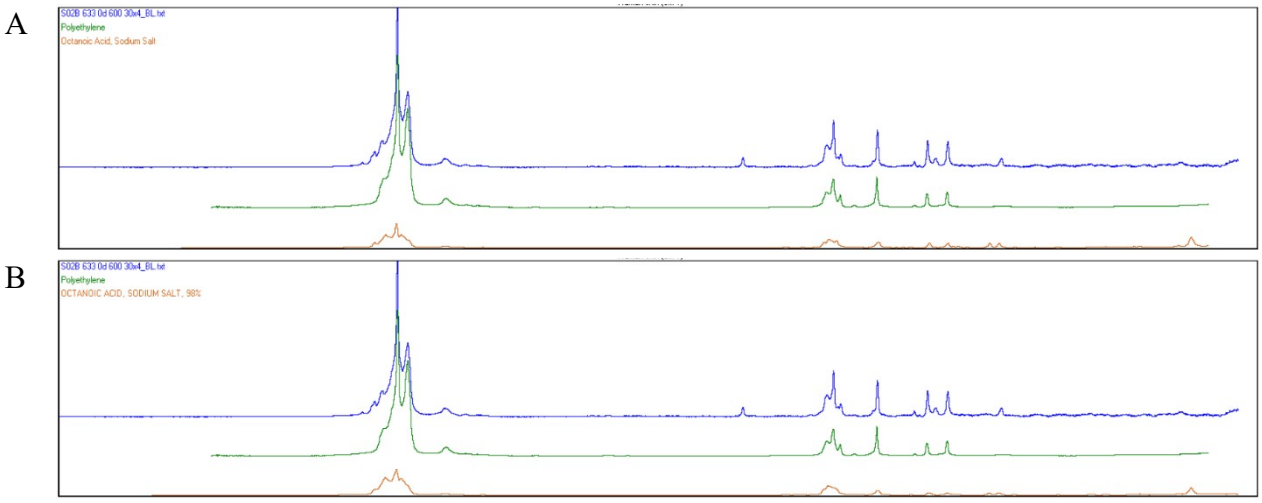

Figure S7. Overlaid Raman spectra of the mixed precipitate from brand #3 in the scrubs category with the representative examples of multicomponent search demonstrating the highest matching degrees. A: polyethylene (86.3 %) + octanoic acid, sodium salt (13.7 %); matching degree: 78 %; B: polyethylene (82.5 %) + octanoic acid, sodium salt (17.5 %); matching degree: 77.6 %.

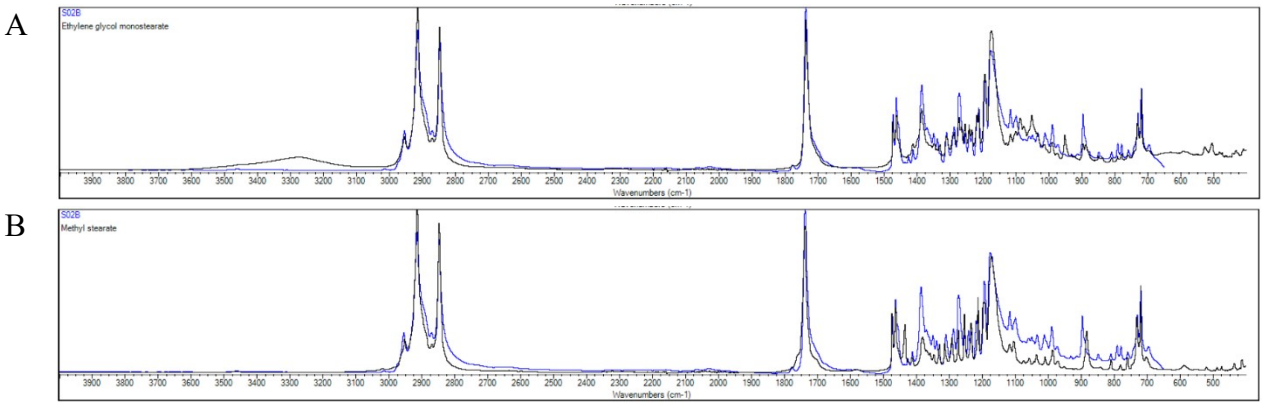

Figure S8. Overlaid FTIR spectra of the mixed precipitate from brand #3 in the scrubs category, compared with the two standards demonstrating the highest matching degrees. A: ethylene glycol monostearate (90.2 % matching); B: methyl stearate (79.9 % matching); all other comparisons demonstrate matching degree below 60 %.

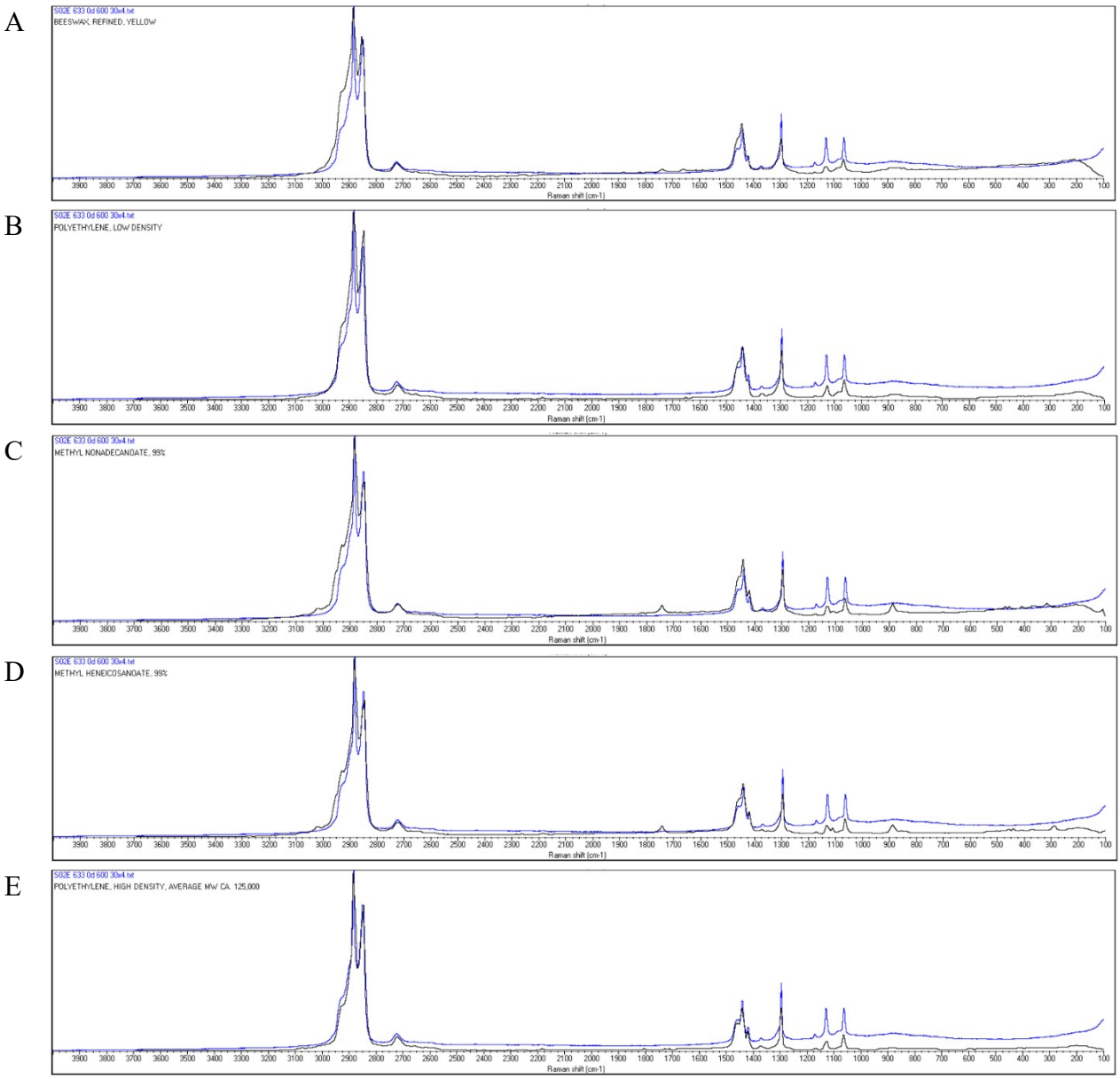

Figure S9. Overlaid Raman spectra of purified MPs isolated from brand #3 in the scrubs category and washed with chloroform with the representative examples of standards demonstrating high matching degrees. A: beewax, refined, yellow (94.9 % matching); B: polyethylene, low density (94.5 % matching); C: methyl nonadecanoate, 99 % (93.6 % matching); D: methyl heneicosanoate, 99 % (93.6 % matching); E: polyethylene, high density, average M_w ca. 125000 (93.5 % matching).

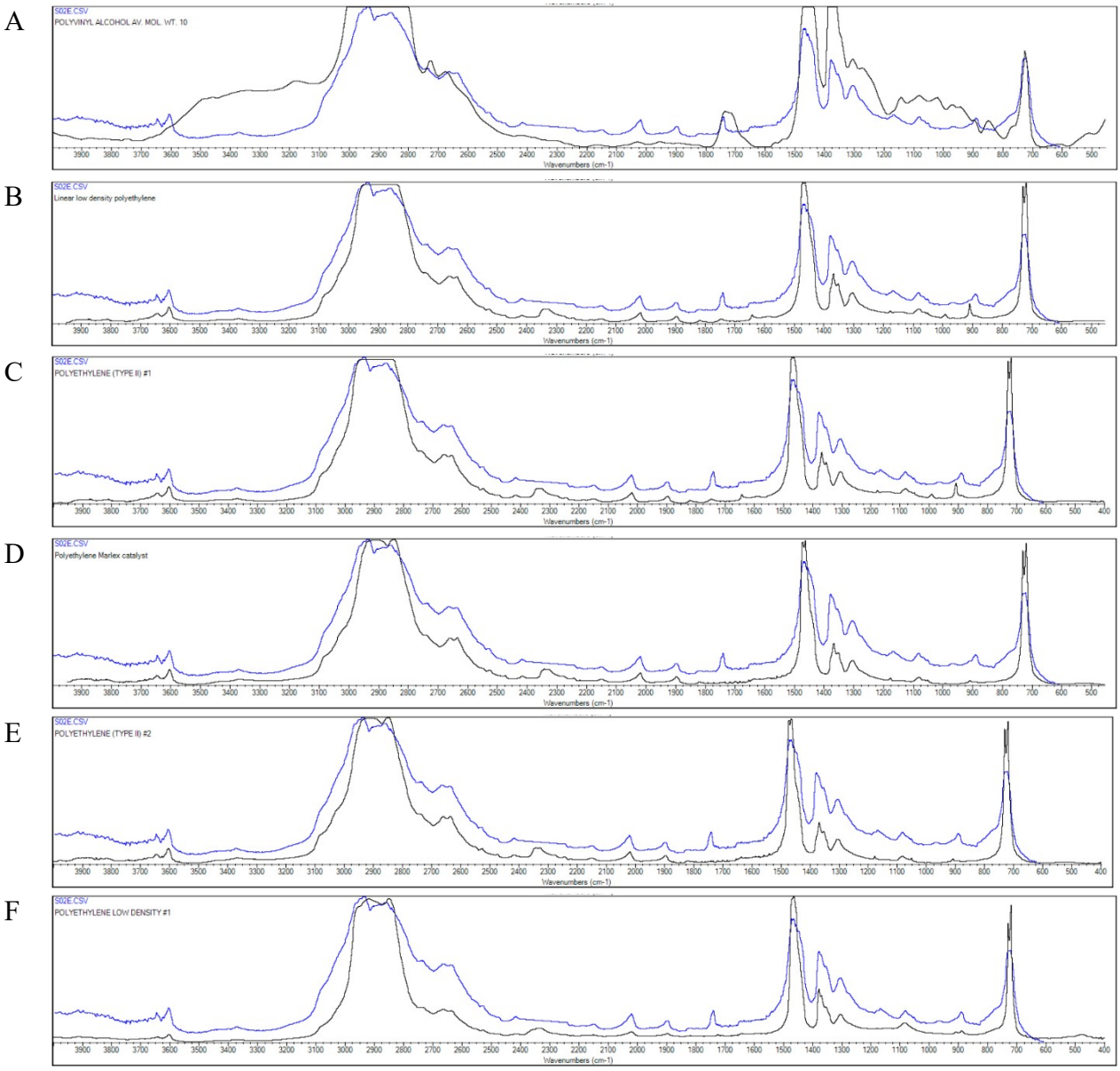

Figure S10. Overlaid FTIR spectra of purified MPs isolated from brand #3 in the scrubs category and washed with chloroform with the representative examples of standards demonstrating high matching degrees. A: polyvinyl alcohol, av. Mol. Wt. 10 (76.6 % matching); B: linear low density polyethylene (73.5 % matching); C: polyethylene (type II) #1 (73.3 % matching); D: polyethylene Marlex catalyst (69.4 % matching); E: polyethylene (type II) #2 (69.1 % matching); F: polyethylene, low density, #1 (66.8 % matching).

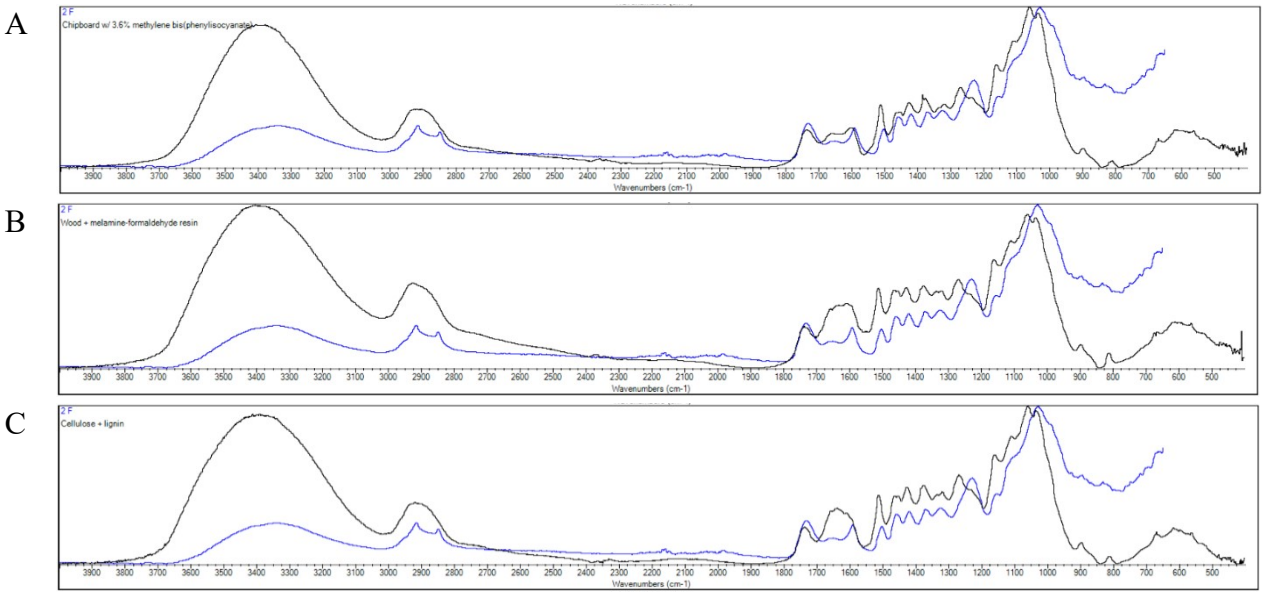

Figure S11. Overlaid FTIR spectra of MPs isolated from brand #6 in the hand cleaning pastes category with the representative examples of standards demonstrating the highest possible matching degrees. A: chipboard with 3.6 % methylene bis(phenylisocyanate) (63.2 % matching); B: wood + melamine-formaldehyde resin (62.9 % matching); C: cellulose + lignin (62.7 % matching).

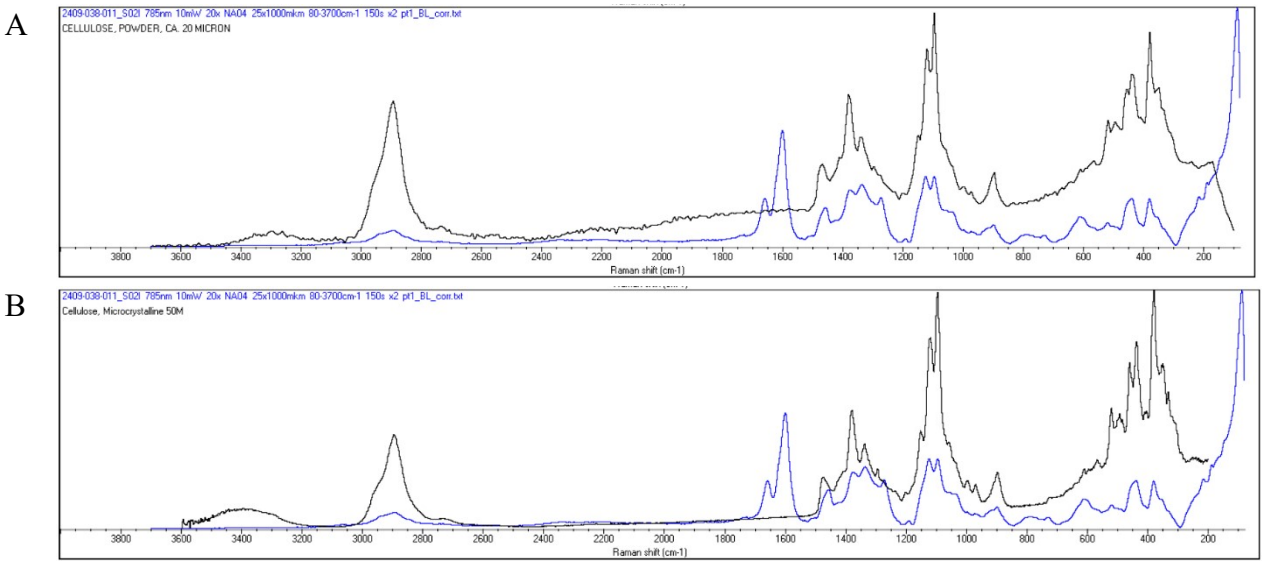

Figure S12. Overlaid Raman spectra of MPs isolated from brand #6 in the hand cleaning pastes category) with the representative examples of cellulose standards. A: Cellulose, powder, ca. 20 μm; B: Cellulose, microcrystalline 50 M.

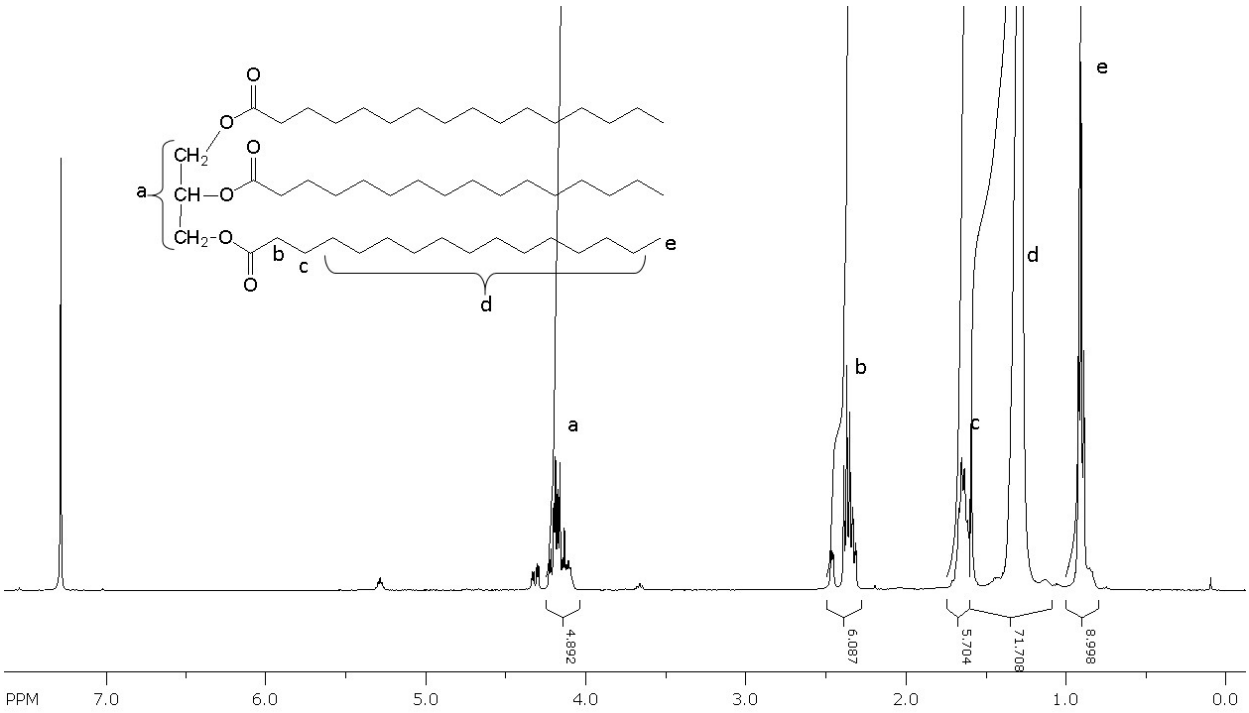

Figure S13. ^{1}H NMR spectrum of chloroform-soluble precipitate isolated from brand #3 in peelings category and its attribution with glycerol tripalmitate. Conditions: $CDCl_3$, room temperature.