Phosphatidylcholine and Phosphatidylserine Uniquely Modify the Secondary Structure of Alpha-Synuclein Oligomers Formed in Their Presence at the Early Stages of Protein Aggregation

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Supporting Information

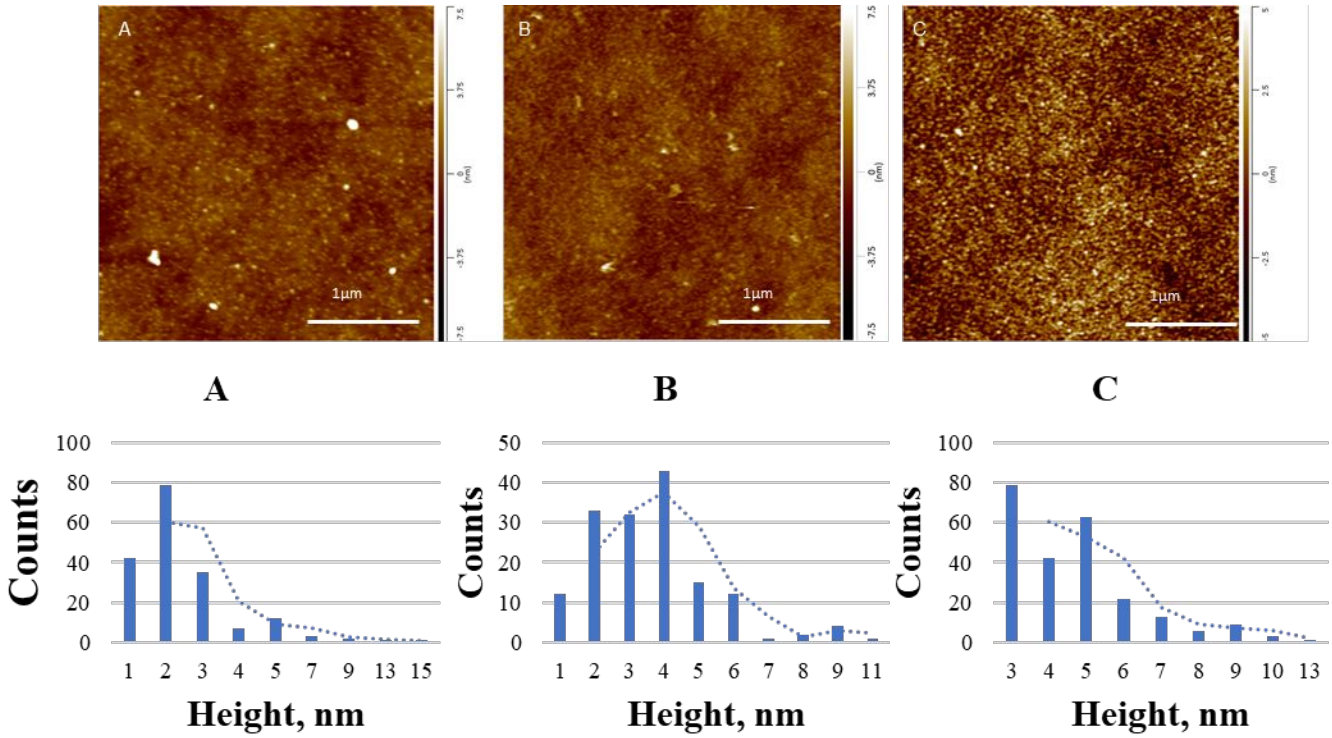

Figure S1. AFM images of α-Syn aggregates formed at day 2 (A), day8 (B) and day15 (C). Height profiles of α-Syn aggregates formed at day2 (D), day8 (E), and day 15 (F). Height profile of α-Syn aggregates formed at day 2 (A), day8 (B) and day15 (C).

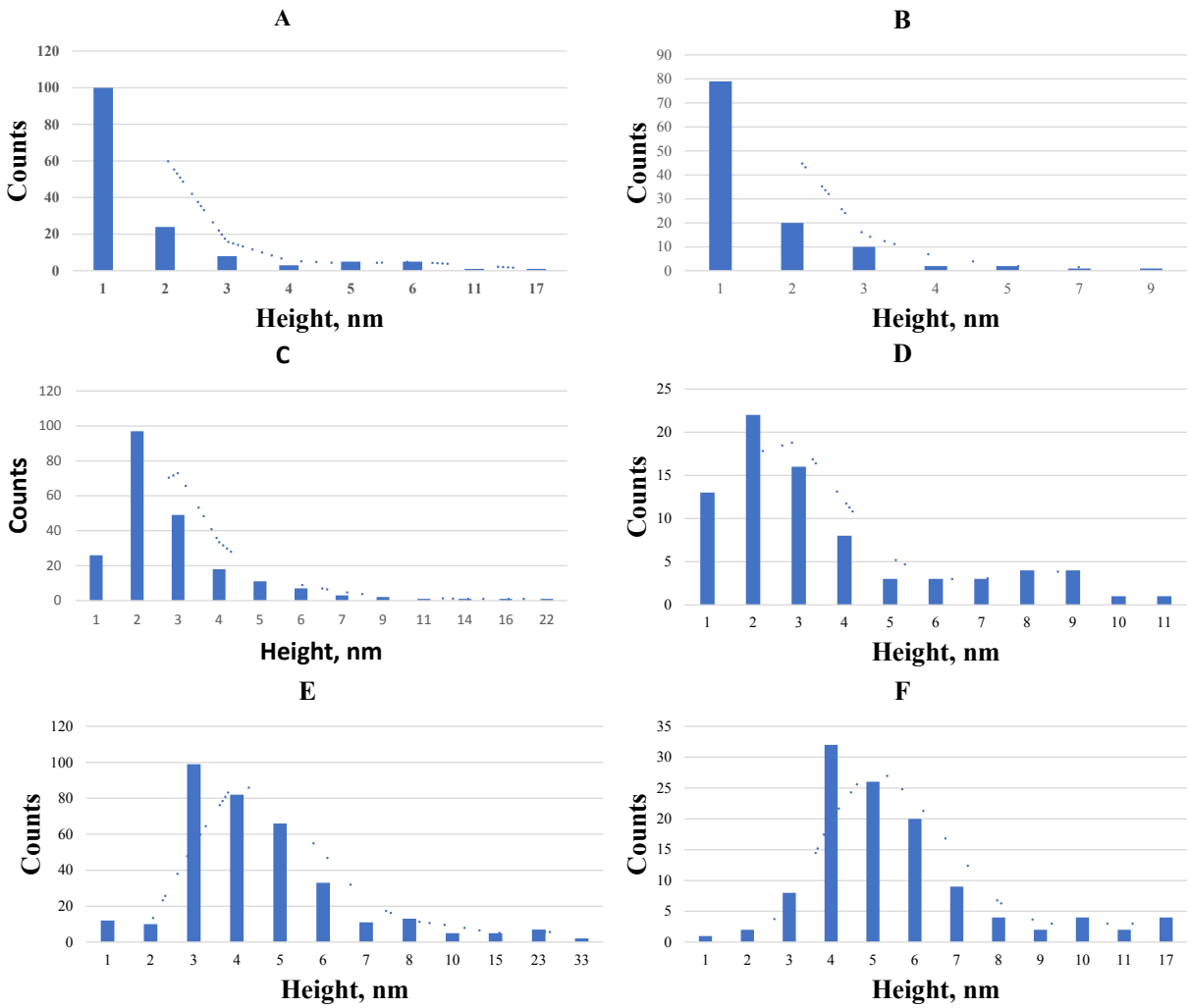

Figure S2. Height profiles of α-Syn:PC (A, C and E) and α-Syn:PS (B, D and F) oligomers observed at D2 (A-B), D8 (C-D) and D15 (E-F).

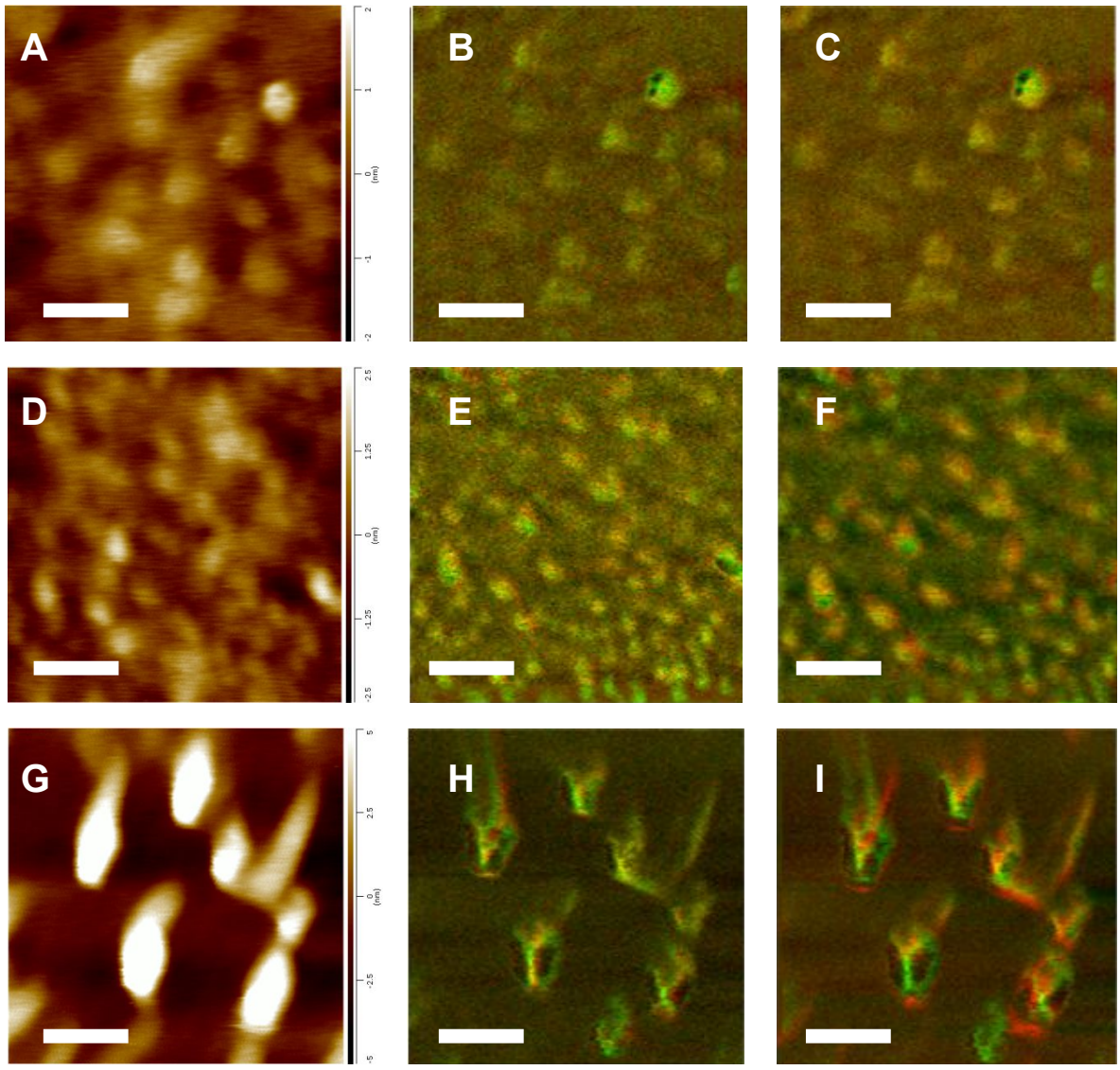

Figure S3. AFM-IR maps of α-Syn oligomers formed at D2 (A-C), D8 (D-F) and D15 G-I) in the lipid-free environment. AFM height images (A, D, G), IR ratio overlaying map of 1624 cm^{-1} (parallel β-sheet) (green) and 1655 cm^{-1} (α-helix/unordered protein secondary structure) (red) (B, E, H), and overlaying map of 1624 (parallel β-sheet) and 1694 cm^{-1} (antiparallel β-sheet) (C, F, I). Scale bar, 100nm.

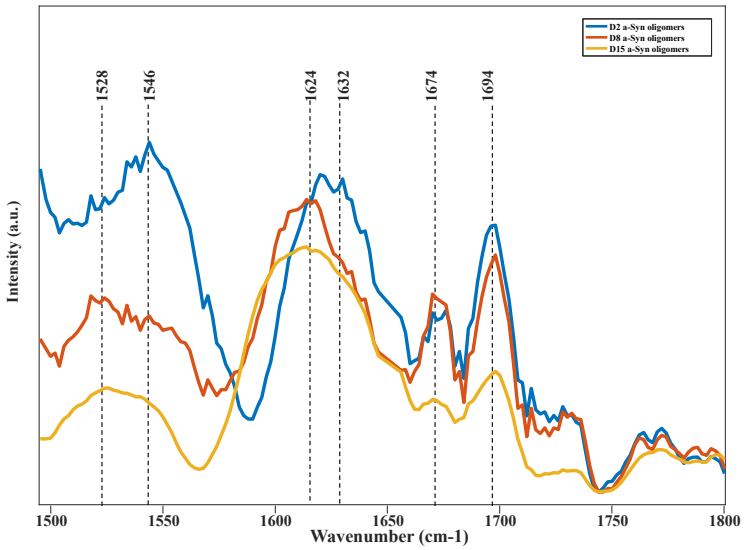

Figure S4. Averaged AFM-IR spectra collected from α-Syn oligomers at D2, D8 and D15 htat were grown in the lipid-free environment.

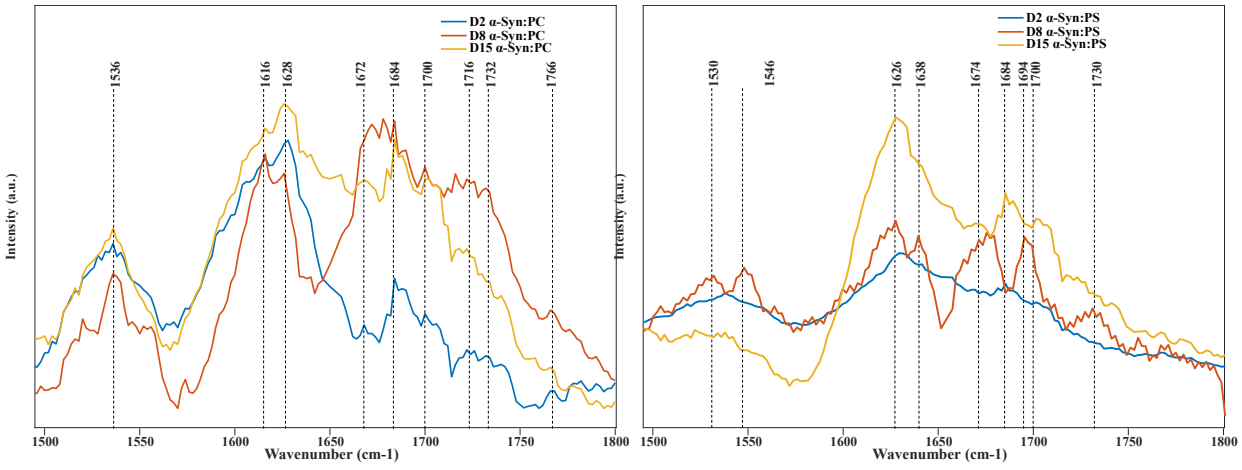

Figure S5. Averaged AFM-IR spectra collected from α-Syn:PC and α-Syn:PS oligomers at D2, D8 and D15.

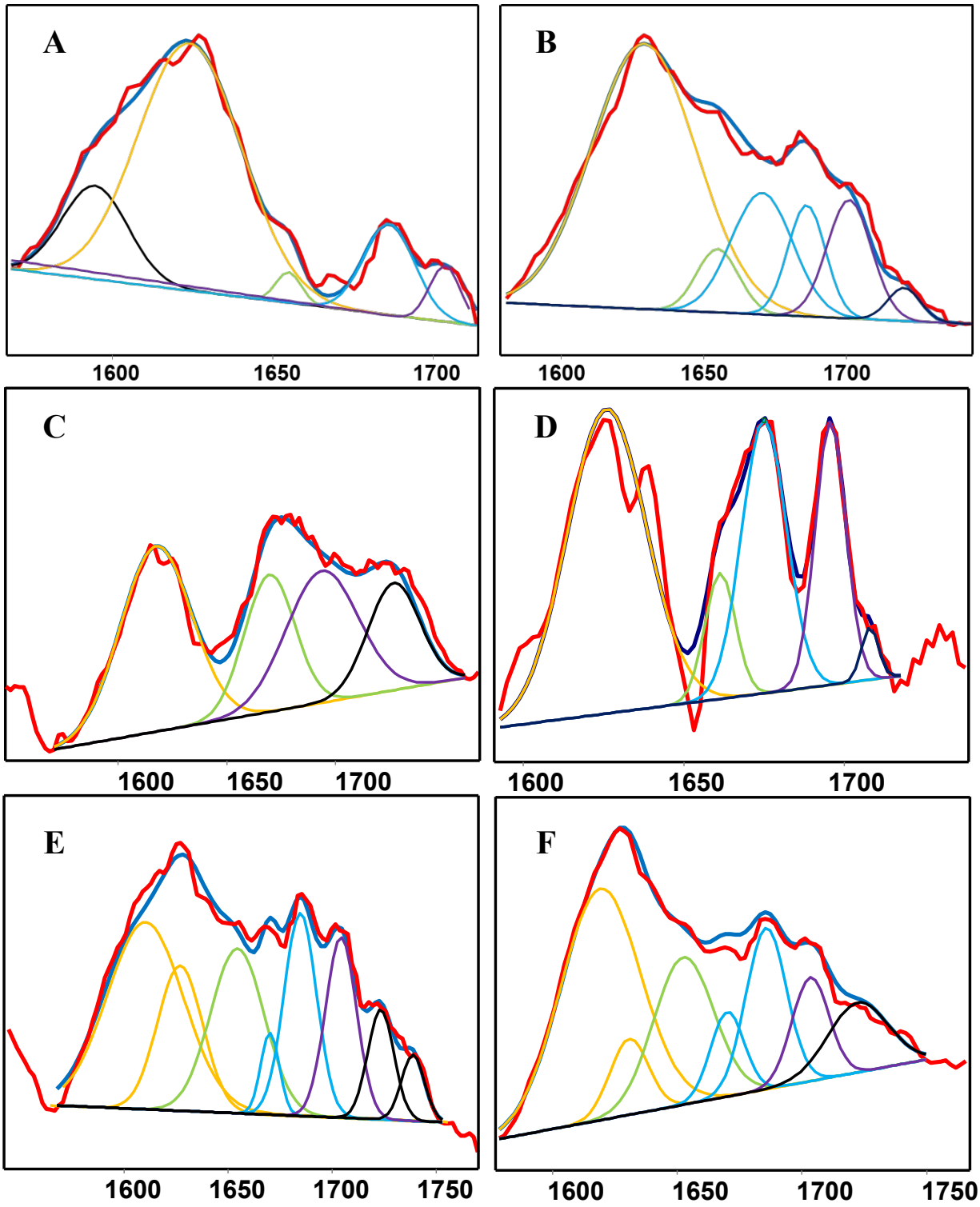

Figure S6. Averaged AFM-IR spectra and secondary structure deconvolution of amide I band of α-Syn:PC (A, C, E) and α-Syn:PS (B, D, F) oligomers formed at D2 (A,B), D8 (C,D) and D15 (E,F).

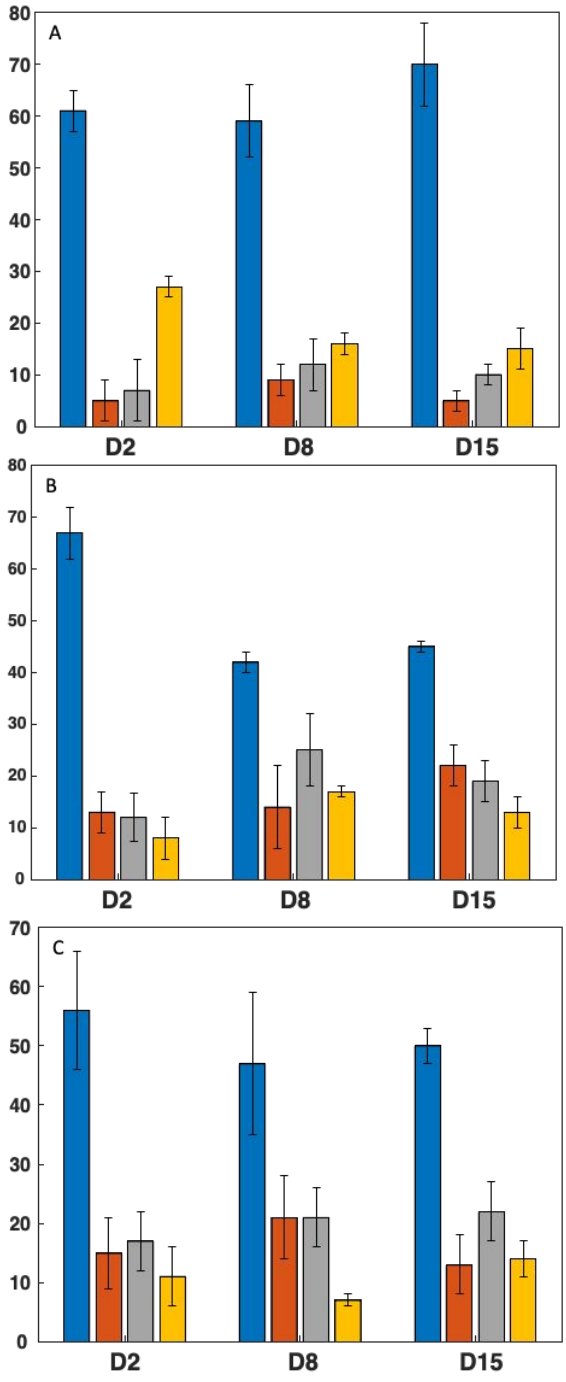

Figure S7. Bar plot of protein secondary structure of α-Syn (A), α-Syn:PC (B), α-Syn:PS (C) oligomers on day 2, day 8 and day15. Parallel beta sheet (blue), alpha helix and random coil (red), beta-turn (grey) and antiparallel beta sheet (yellow) percentages were calculated based on peak fitting of 3-4 different oligomers.

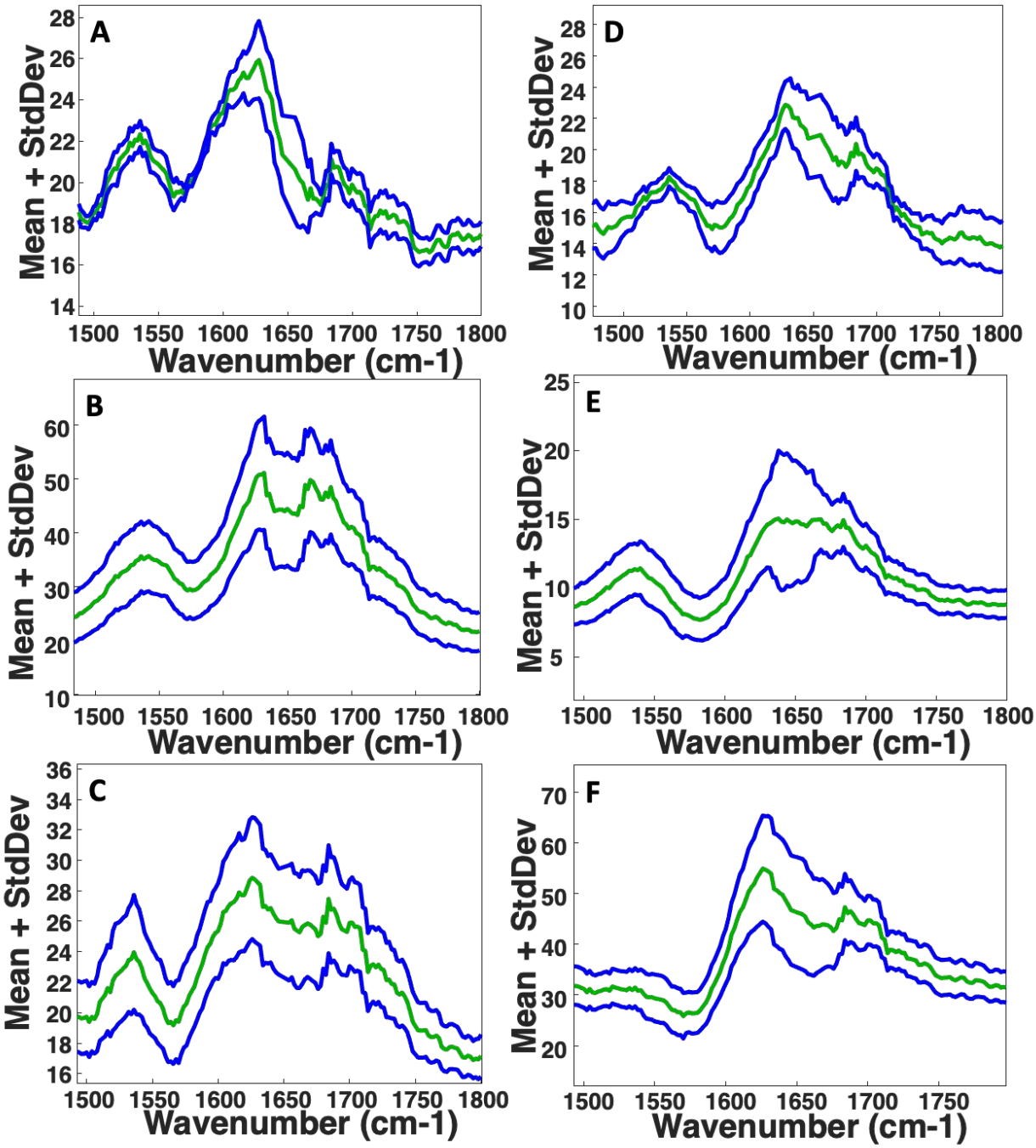

Figure S8. Mean (green) and standard deviation (blue) AFM-IR spectra of α-Syn:PC (A-C) and α-Syn:PS (D-F) oligomers on day 2 (A,D), day 8 (B,E) and day 15 (C, F).

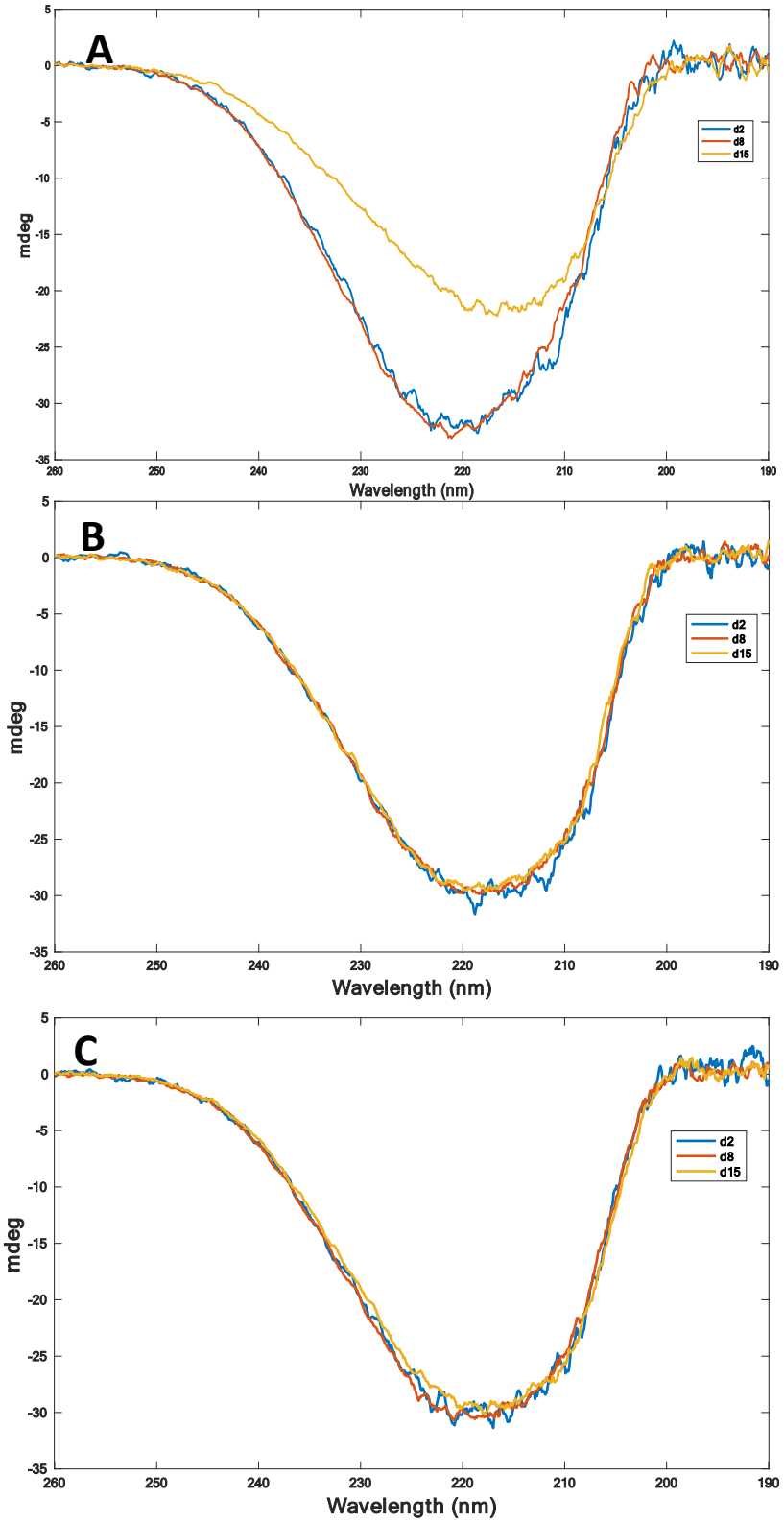

Figure S9. CD spectra of α-Syn (A), α-Syn:PC (B) and α-Syn:PS (C) on d2 (blue), d8 (orange) and d15 (yellow).

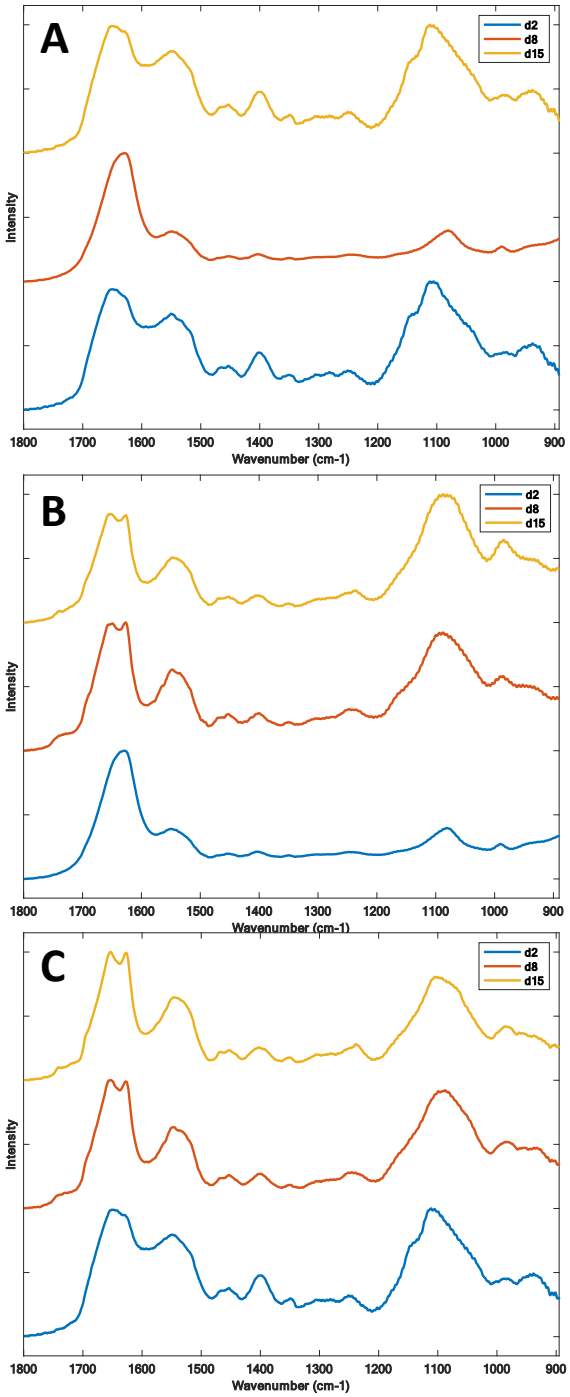

Figure S10. FT-IR spectra of α-Syn (A), α-Syn:PC (B) and α-Syn:PS (C) on d2 (blue), d8 (orange) and d15 (yellow).