

## Supplementary Materials

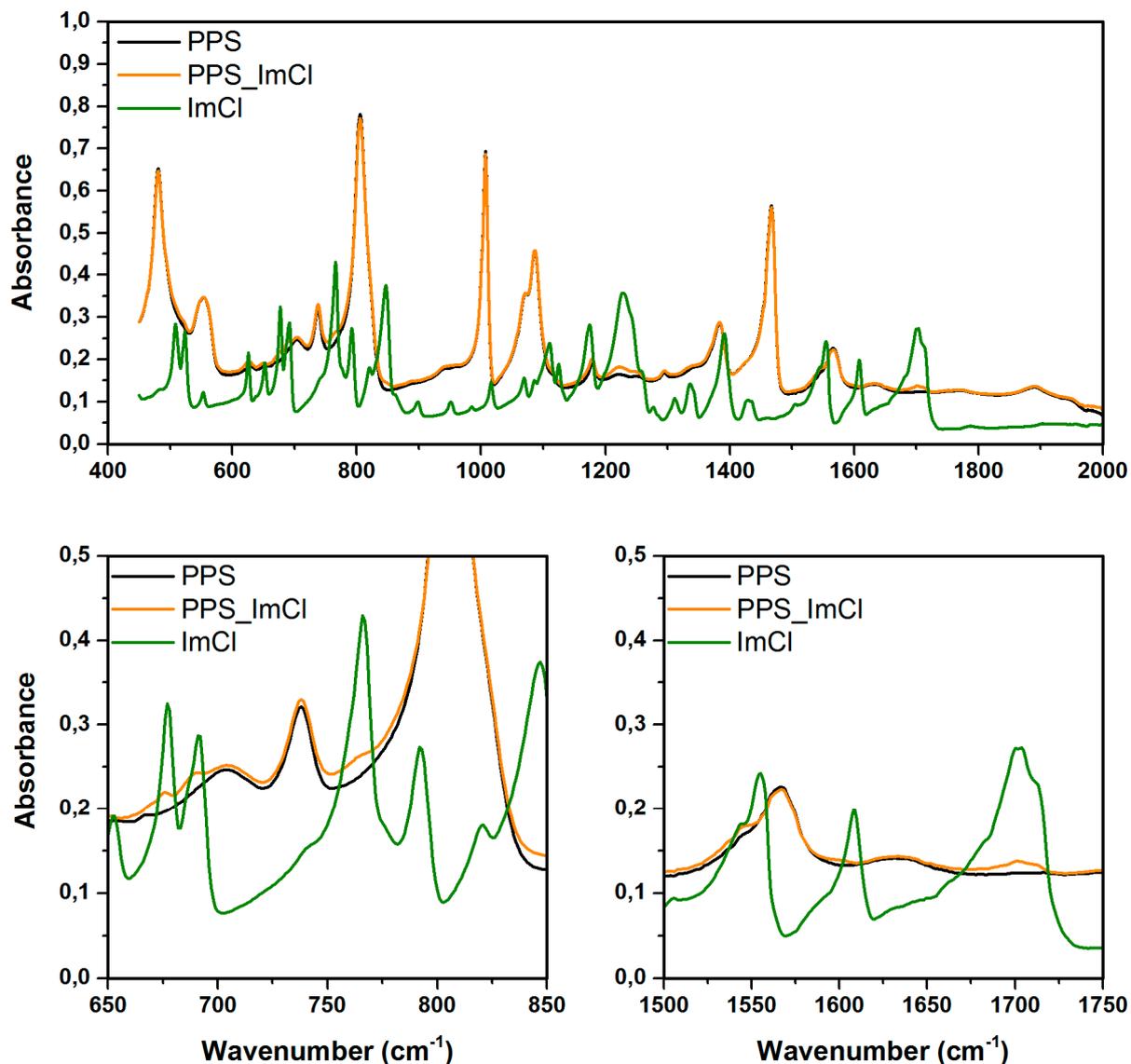
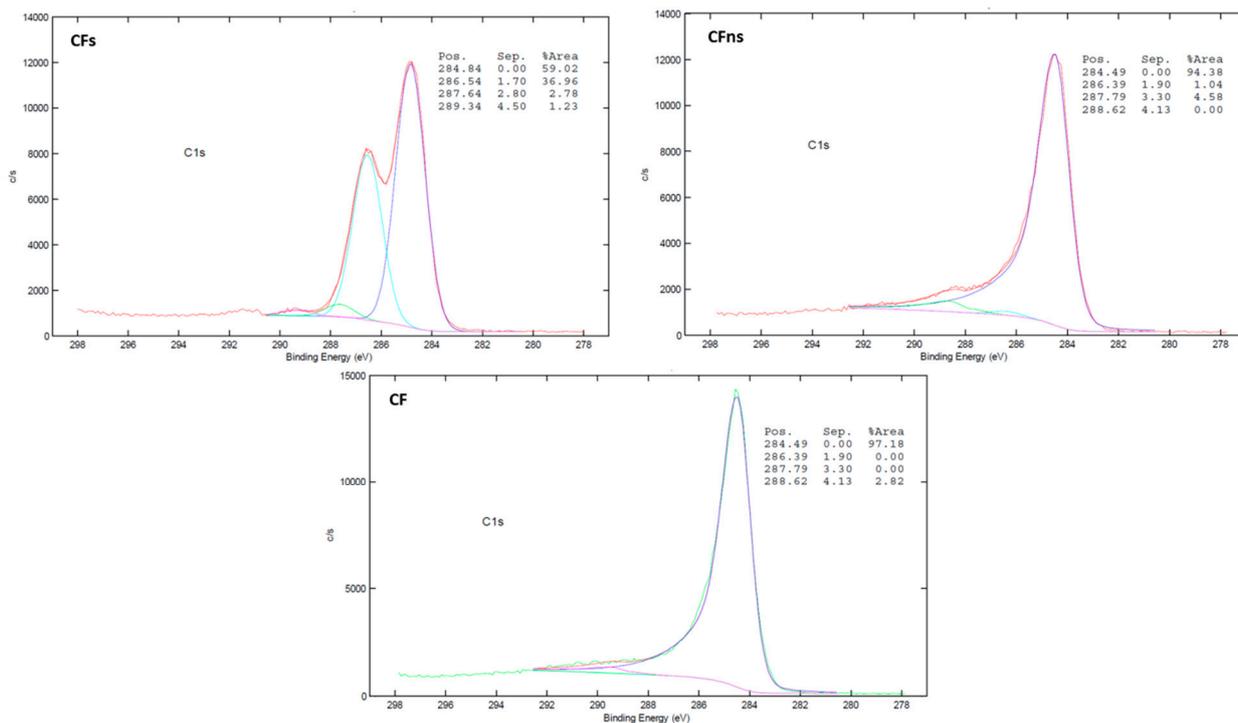


Figure S1. FTIR spectra of neat PPS ,PPS\_ImCl at 300°C and ImCl at room temperature .

Table S1. Main infrared band assignments for PPS.

Peak position $\text{cm}^{-1}$ ( $T_{\text{amb}}$ ) [27]	Peak observed $\text{cm}^{-1}$ Present work (300 °C)	Band assignment [27]
1574	1568	Sym. Ring stretching
1472	1467	Ring stretching
1389	1384	Ring stretching
1093	1086	Anti. Ring-S stretching
1074	1071	Sym. Ring-S stretching
1010	1007	C-H i.p. deformation
812	805	C-H o.p. deformation
743	738	Ring deformation
480	480	O.p. skeletal deformation



**Figure S2.** Decomposition of the Carbon pic.

**Table S2.** Chemical function obtained from the decomposition of C1s pic.

Fiber	C-C/C-H	C-O/C-N	C=O/O-C-O	O-C=O
S-CF	59	37	3	1
NS-CF	94	1	5	-
NT-CF	96	1	-	3

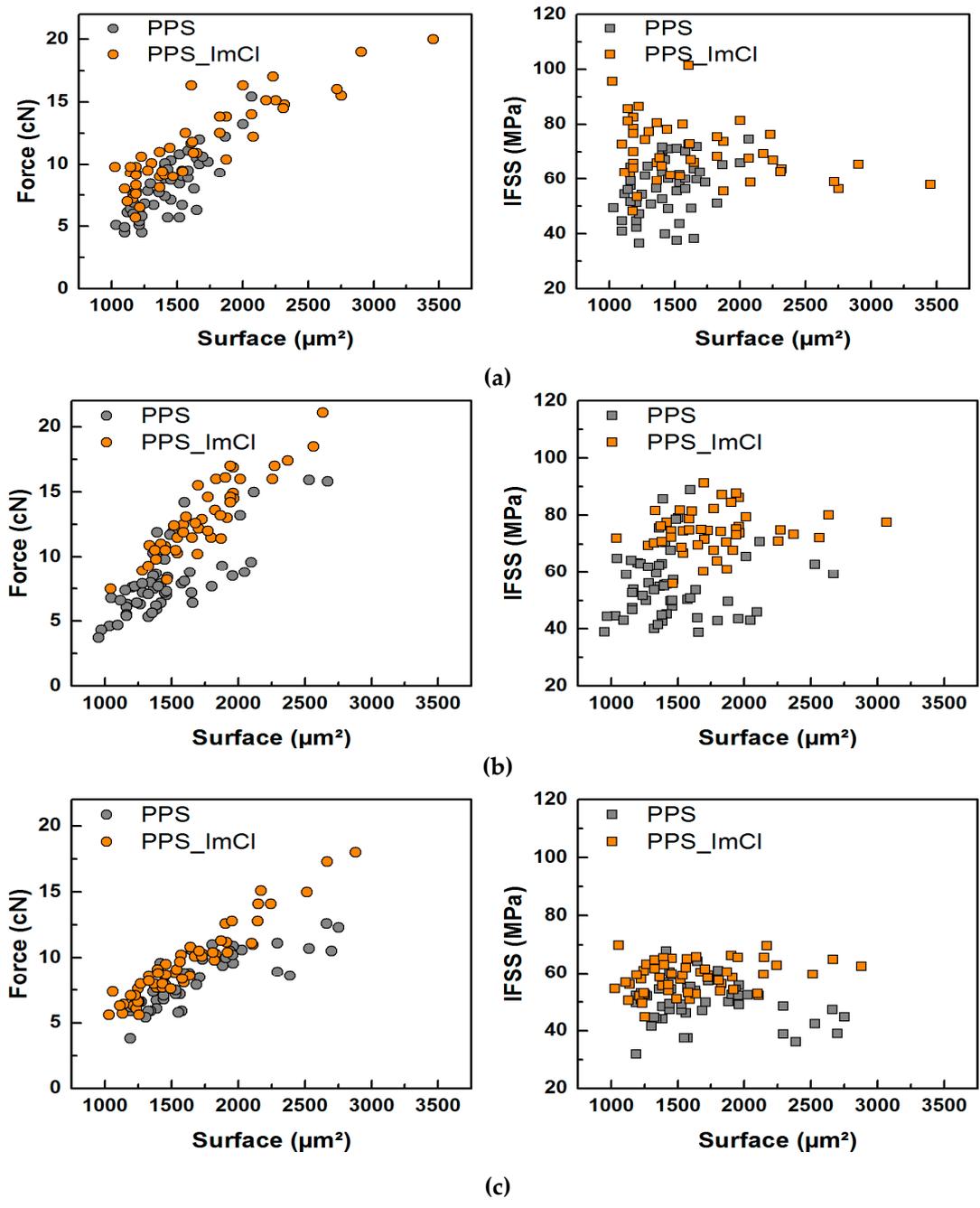


Figure S3. Evolution of interfacial Force and IFSS as a function the embedded surface for S-CF (a), NS-CF (b) and NT-CF (c) systems.