Supplementary Material

Morphological, Electrical and Chemical Characteristics of Poly(sodium 4-styrenesulfonate) Coated PVDF Ultrafiltration Membranes after Plasma Treatment



**Figure S1.** PVDF configurations. **a**) *α* phase and **b**) *β* phase.



**Figure S2.** Zoom Raman spectra of **a**) HFM-183+PSS and **b**) HFM-183+PSS+Ar.

**Table S1.** Peaks in the Raman spectra.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **PVDF Film Raman Shift**  **(cm−1)** | **Peak** | **HFM-183 Raman Shift**  **(cm−1)** | **Peak** | **HFM-183+PSS Raman Shift (cm−1)** | **Peak** | **HFM-183+PSS+Ar Raman Shift (cm−1)** | **Peak** |
| 3010 | CH asymmetric stretching | 3010 | CH asymmetric stretching | 3010 | CH asymmetric stretching | 3010 | CH asymmetric stretching o |
| 2990 | CH symmetric stretching | 2990 | CH symmetric stretching | 3090 | C–H aromatic, stretching | 3090 | C–H aromatic, stretching |
| 1440 | CH stretching | 1730 | C=N | 2990 | CH symmetric stretching | 2990 | CH symmetric stretching |
| 1300 | CF2 stretching | 1610 | NH3 out of phase bending | 2900 | C–H aliphatic, stretching | 2900 | C–H aliphatic, stretching |
| 1200 | CF2 stretching | 1520 | NH3 in phase bending | 1730 | C=N | 1730 | C=N |
| 1150 | C–C stretching | 1440 | CH stretching | 1610 | NH3 out of phase bending | 1610 | NH3 out of phase bending |
| 1080 | CH bending | 1300 | CF2 stretching | 1520 | NH3 in phase bending | 1520 | NH3 in phase bending |
| 890 | CH bending | 1200 | CF2 stretching | 1450 | CH2 bending | 1450 | CH2 bending |
| 850 | CH2 rocking - CF2 out of phase stretching | 1150 | C–C | 1440 | CH stretching | 1440 | CH stretching |
| 810 | CF2 in phase\*\* | 1080 | CH bending | 1300 | CF2 stretching | 1300 | CF2 stretching |
| 610 | CF2 bending – CCC out of phase backbone vitration | 1000 | NH stretching | 1200 | CF2 stretching | 1200 | CF2 stretching |
| 510 | CF2 wagging - CF2 in phase bending | 890 | CH bending | 1150 | C–C | 1150 | C–C |
| 410 | CF2 twisting | 850 | CH2 rocking - CF2 out of phase stretching | 1080 | CH bending | 1080 | CH bending |
| 285 | CF2 twisting and wagging | 810 | CF2 in phase | 1030 | -SO3- stretching | 1030 | SO3 stretching |
| 250 | CF2 twisting and wagging | 610 | CF2 bending – CCC out of phase backbone vitration | 1005 | C–C stretching, p-substituted ring | 1000 | C–C stretching, p-substituted ring |
|  |  | 510 | CF2 wagging - CF2 in phase bending | 1000 | NH stretching | 1000 | NH stretching |
|  |  | 410 | CF2 twisting | 890 | CH bending | 890 | CH bending |
|  |  | 285 | CF2 twisting and wagging | 850 | CH2 rocking - CF2 out of phase stretching | 850 | CH2 rocking - CF2 out of phase stretching |
|  |  | 250 | CF2 twisting and wagging | 810 | CF2 in phase | 810 | CF2 in phase |
|  |  |  |  | 800 | C–S stretching | 800 | C–S stretching |
|  |  |  |  | 610 | CF2 bending – CCC out of phase backbone vitration | 610 | CF2 bending – CCC out of phase backbone vitration |
|  |  |  |  | 600 | SO3 bending | 510 | CF2 wagging - CF2 bending in phase |
|  |  |  |  | 510 | CF2 wagging - CF2 in phase bending | 285 | CF2 twisting and wagging |
|  |  |  |  | 410 | CF2 twisting |  |  |
|  |  |  |  | 285 | CF2 twisting and wagging |  |  |
|  |  |  |  | 250 | CF2 twisting and wagging |  |  |