

## Enhancing of transport parameters and antifouling properties of PVDF membranes modified with Fe<sub>3</sub>O<sub>4</sub> nanoparticles in the process of proteins fractionation

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### Appendix. FTIR peak assignments associated

| Unmodified PVDF                   |                                                  | Modified PVDF                     |                                                           |
|-----------------------------------|--------------------------------------------------|-----------------------------------|-----------------------------------------------------------|
| Peak Position (cm <sup>-1</sup> ) | Peak Assignment                                  | Peak Position (cm <sup>-1</sup> ) | Peak Assignment                                           |
| 877                               | C-F valence vibrations of CF <sub>2</sub> groups | 877                               | C-F valence vibrations of CF <sub>2</sub> groups          |
| 1070                              | C-H wag (-CH <sub>2</sub> F) alkyl halides       | 1070                              | C-H wag (-CH <sub>2</sub> F) alkyl halides                |
| 1174                              | C-F valence vibrations of CF <sub>2</sub> groups | 1174                              | C-F valence vibrations of CF <sub>2</sub> groups          |
| 1420                              | deformation vibrations of C-H bonds              | 1420                              | deformation vibrations of C-H bonds                       |
|                                   |                                                  | 1558                              | deformation fluctuation of N-H bonds                      |
|                                   |                                                  | 1651                              | valence oscillations of conjugated and isolated C=C bonds |
| 2979                              | C-H valence vibrations of CH <sub>2</sub> groups | 2976                              | C-H valence vibrations of CH <sub>2</sub> groups          |
|                                   |                                                  | 3010                              | of =C-H bonds of polyethyleneimine                        |
|                                   |                                                  | 3100-3502                         | N-H valence vibrations<br>O-H stretch of solvent          |
|                                   |                                                  | 3641                              | N-H valence vibrations                                    |