Solar photocatalytic degradation of niflumic acid using a TiO_2/PVDF–TrFE nanocomposite membrane: artificial neural network modeling

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Supporting Information

1. Supporting information for sub-chapter 3.

Table S1. Process variables and their operating range.

Experimental variable	Operating range
Initial NFA concentration (mg/L)	10 – 30
pH	3 - 9
Irradiation time (h)	0 -6
Radiation intensity (W/m^2)	269 - 925

2. Supporting information for sub-chapter 4.1.

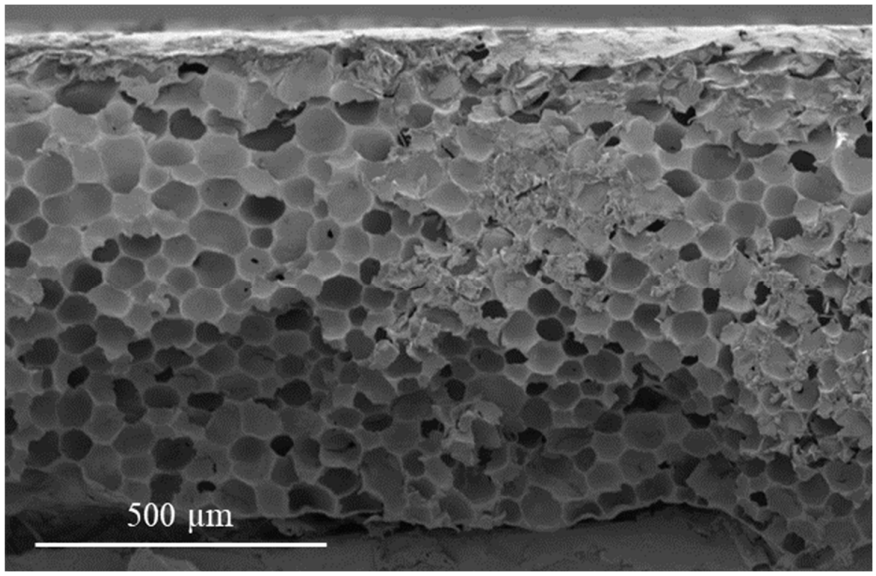

Figure S1. Representative SEM cross-section image of PVDF-TrFE membrane.

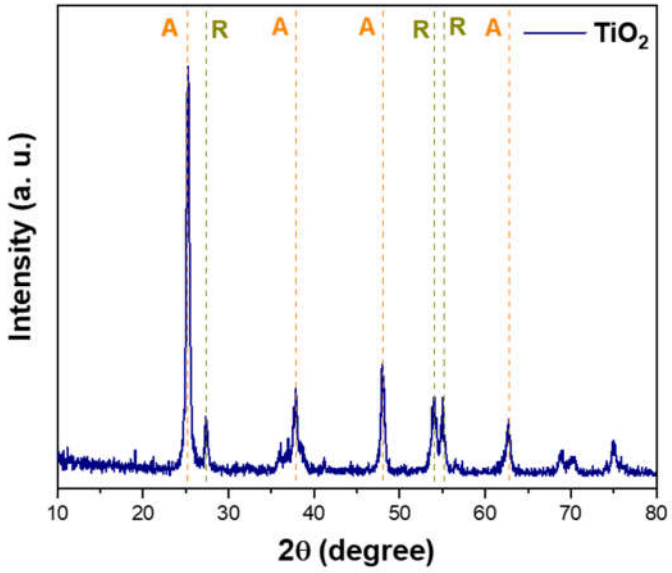

Figure S2. XRD pattern of TiO_2 nanoparticles.

3. Supporting information for sub-chapter 4.2.

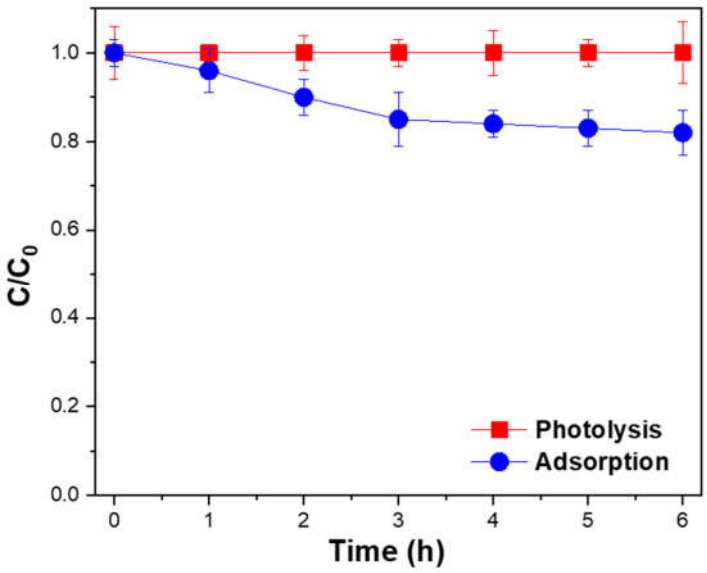

Figure S3. Effect of photolysis and adsorption processes on NFA degradation.

4. Supporting information for sub-chapter 4.2.1.

Table S2. Effect of initial NFA concentration on photocatalytic degradation efficiency and rate constant.

C_0 (mg/L)	Efficiency (%)	Rate constant (min^{-1})	R^2
10	91	0.28	0.93
20	76	0.17	0.95
30	59	0.11	0.94

5. Supporting information for sub-chapter 4.5.

Table S3. Weight and bias matrix of the ANN model.

Weights and bias: Input layer – Hidden layer						Weights and bias: Hidden layer – Output layer		
Neuron	**Inputs**				**Bias**	**Neuron**	**Weights**	**Bias**
	[NFA] (mg/L)	**pH**	**Time (h)**	**Radiation intensity (W/m^2)**				
1	- 0,5071	- 0,0503	- 3,0541	0,1888	- 2,7232	**1**	- 0,5788	- 0,3796
2	0,0970	- 1,8525	- 0,9105	- 0,2183	2,1129	**2**	0,5938	
3	0,7826	1,1945	0,4955	- 2,0058	- 0,6591	**3**	- 0,1363	
4	- 1,9199	- 0,3599	1,3549	1,1247	0,9924	**4**	0,1971	
5	- 0,3115	1,0535	- 1,2946	1,2275	- 0,0473	**5**	- 0,2787	
6	0,0291	2,8858	3,6648	1,1251	- 1,9884	**6**	0,7312	
7	- 1,6460	0,6069	0,3122	- 1,5249	- 1,8305	**7**	0,1854	
8	- 1,3610	- 1,8650	1,7781	- 1,0967	- 2,4857	**8**	0,0376	