

Supporting Information

Fabrication of PMPC/PTM/PEGDA Micropatterns onto Polypropylene Films Behaving Dual Functions of Antifouling and Antimicrobial Activities

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Table S1. Contact angels of PP-PMPC/PTM/PEGDA with different amount of PEGDA

| Samples | Contact angels with different amount of PEGDA (wt.%) | | | | | |
|--|--|-------|-------|-------|-------|-------|
| | 0.5 | 1.0 | 2.5 | 5.0 | 7.5 | 10.0 |
| PP-PMPC/PTM/PEGDA coating | 14.7° | 22.3° | 30.9° | 35.9° | 42.6° | 46.9° |
| 5 μm patterned PP-PMPC/PTM/PEGDA | 77.0° | 52.4° | 28.8° | 29.0° | 40.1° | 46.1° |
| 10 μm patterned PP-PMPC/PTM/PEGDA | 48.9° | 36.6° | 28.0° | 31.3° | 34.1° | 47.3° |

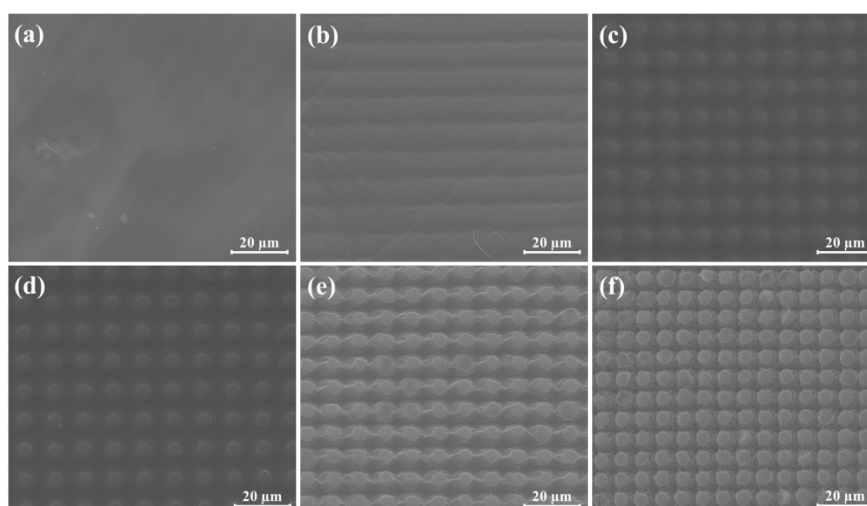


Figure S1. SEM images of 5 μm PP-PMPC/PTM/PEGDA surface with different PEGDA addition of (a) 0.5%, (b) 1.0%, (c) 2.5%, (d) 5.0%, (e) 7.5% and (f) 10.0%.

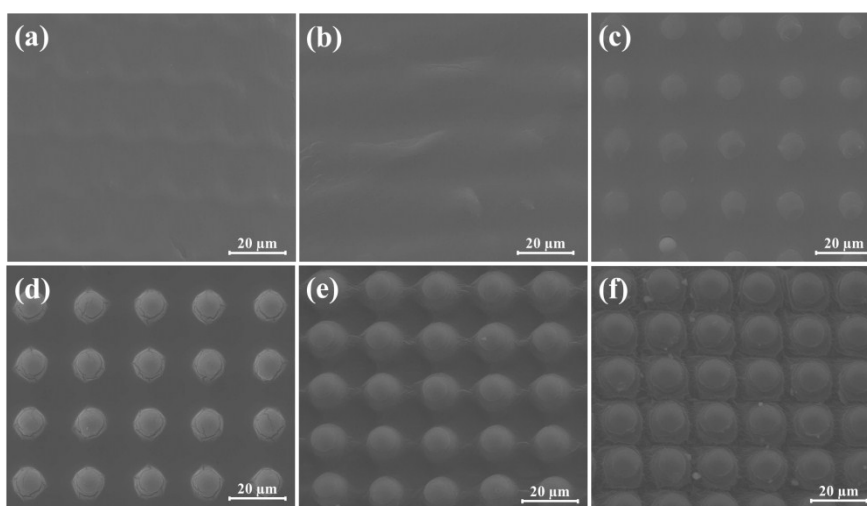


Figure S2. SEM images of 10 μm PP-PMPC/PTM/PEGDA surface with different PEGDA addition of (a) 0.5%, (b) 1.0%, (c) 2.5%, (d) 5.0%, (e) 7.5% and (f) 10.0%.

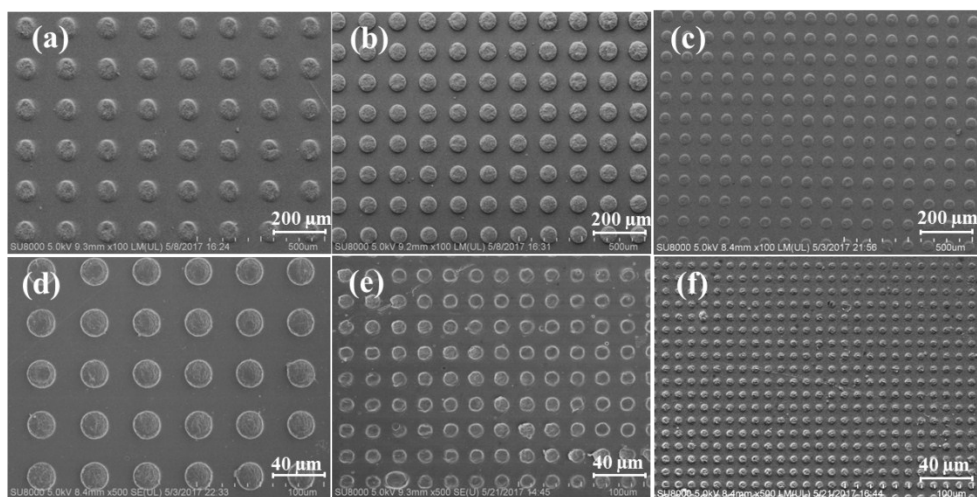


Figure S3. SEM images of patterned PP-PMPC/PTM/PEGDA samples with different micropattern sizes of (a) 80 μm , (b) 60 μm , (c) 40 μm , (d) 20 μm , (e) 10 μm and (f) 5 μm .

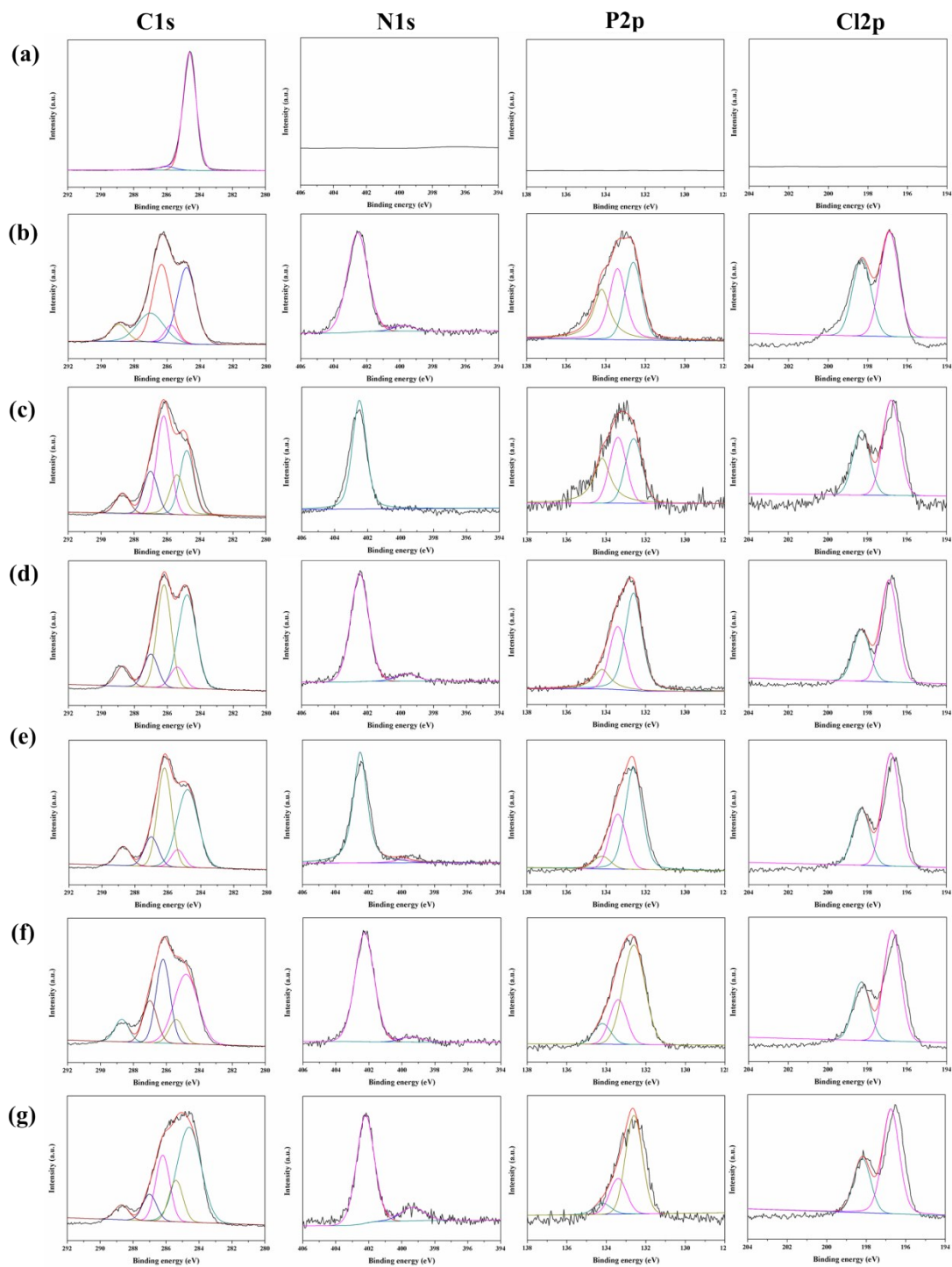


Figure S4. XPS core-level spectra of characteristic elements for (a) pristine PP, and patterned PP-PMPC/PTM/PEGDA with different micropattern size of (b) 80 μm , (c) 60 μm , (d) 40 μm , (e) 20 μm , (f) 10 μm , (g) 5 μm .

The C1s spectra of pristine PP (Figure S5a) contained a large amount of C-C/C-H (284.6 eV) and trace amounts of C-O (286.2 eV). Patterned PP-PMPC/PTM/PEGDA samples of different micropattern size (Figure S5b-g) showed significant characteristic peaks at 284.6 eV, 286.2 eV, 285.4 eV, 287.0 eV, 288.7 eV for the C1s spectra. 284.6 eV corresponded to C-C/C-H, 286.2 eV corresponded to C-O, and 285.4 eV, 287.0 eV, 288.7 eV corresponded to C-N, C=O, and O-C=O in MPC molecules and TM molecules, respectively. For the N1s spectra, a clear peak appeared at 402.5 eV, corresponding to C-N⁺ in the MPC and TM molecules. The P2p spectra had distinct characteristic peaks at 132.6 eV, 133.4 eV, and 134.2 eV, corresponding to P=O, P-O, and O-P-O in the MPC molecule, respectively. For the Cl2p spectra, characteristic peaks appeared at 198.3 eV and 196.7 eV, correspond to Cl split peaks Cl2p_{1/2} and Cl2p_{3/2}, and the peak area ratio of the two peaks is 1:2. The above results fully indicated that the different sizes of PMPC/PTM/PEGDA micro-patterned molecular layers were successfully grafted on the PP surface.