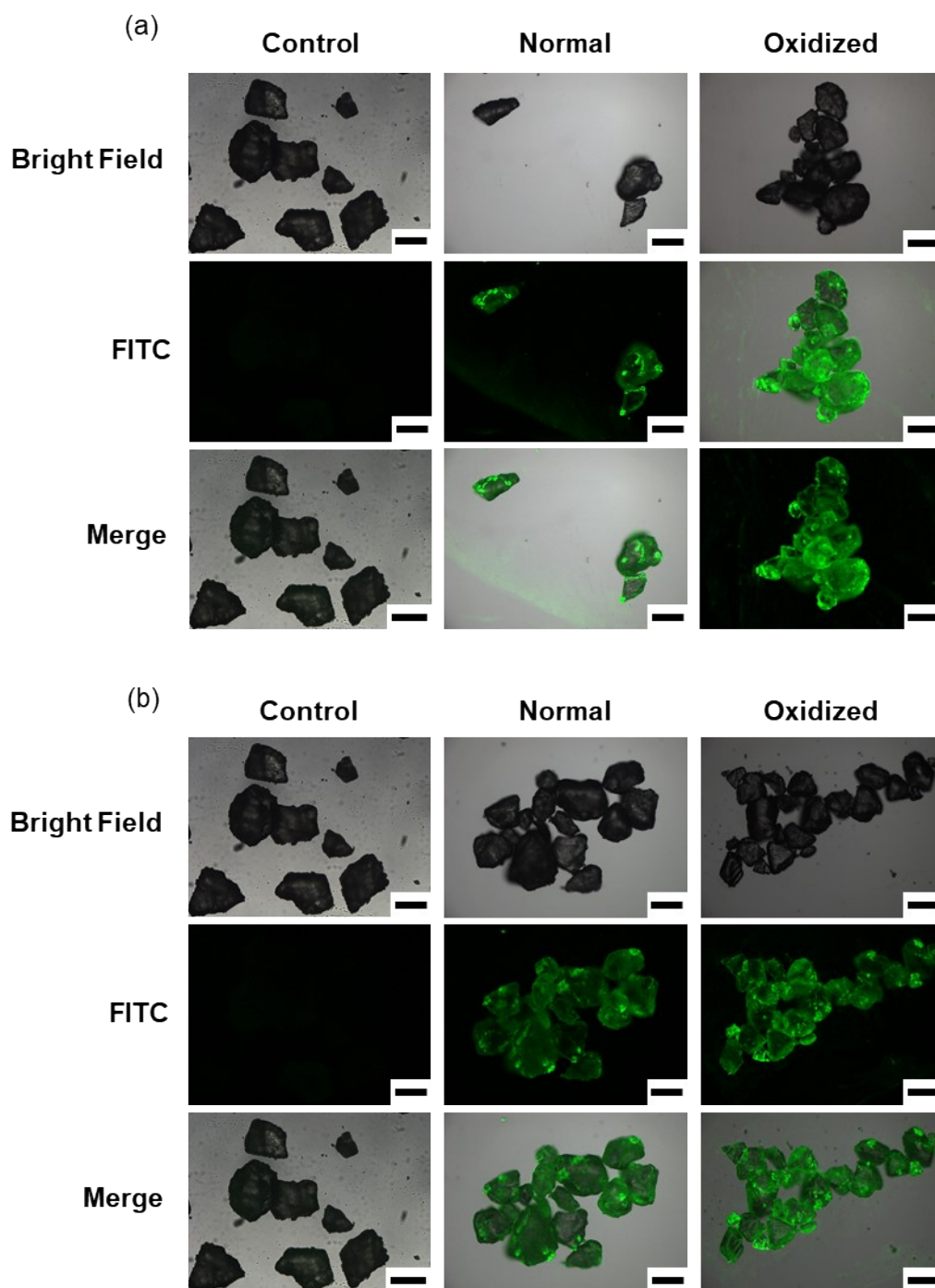
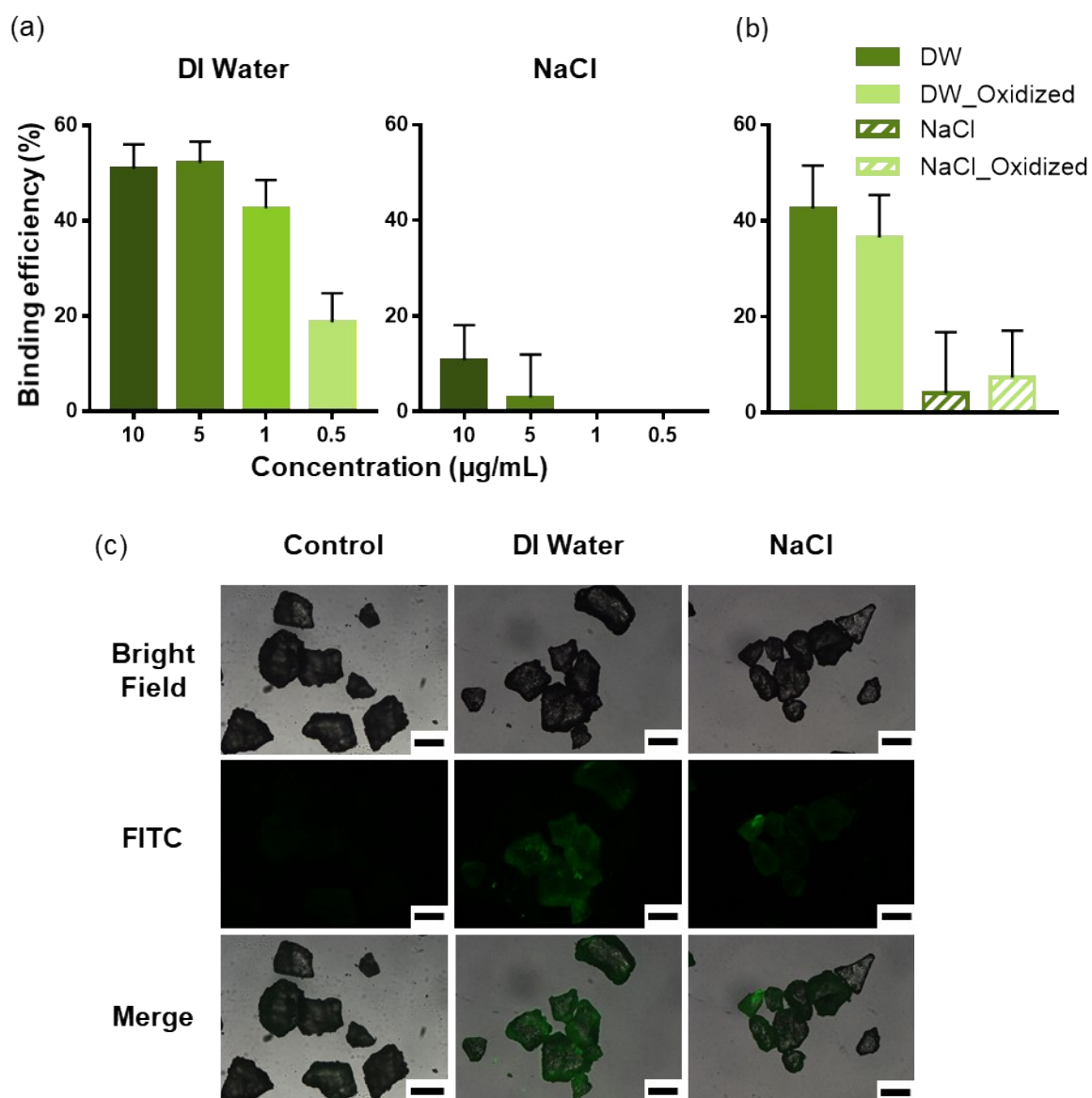


**Supporting Figure S1.** Fluorescence microscopic images were obtained after combining the peptides with PS. “Normal” refers to a plastic sample that has not undergone surface oxidation, whereas “oxidized” refers to a plastic sample that has undergone plasma surface oxidation. (a) DI water and (b) 3.5% NaCl solution. Scale bar: 100 μm.



**Supporting Figure S2.** Fluorescence microscopic images showing peptides bound to polypropylene.

“Normal” refers to a plastic sample that has not undergone surface oxidation, whereas “oxidized” refers to a plastic sample that has undergone plasma surface oxidation. (a) DI water and (b) 3.5% NaCl solution. Scale bar: 100  $\mu\text{m}$ .



**Supporting Figure S3.** Results showing the selectivity of PEBP towards PP (a) Binding affinity of PEBP towards the target microplastic PP as a function of PEBP concentration. Peptide concentrations used were 10, 5, 1, and 0.5 µg/mL. (b) Binding efficiency of PEBP to the oxidized PP in DI water and 3.5% NaCl solution. (c) Fluorescence microscopic results showing PEBP attached to PP surface (PEBP, 10 µg/mL). Scale bar: 100 µm.