Electronic Supplementary Material (ESI) for Polymer Chemistry.

Polyglycerol Coated Polypropylene Surfaces for Protein and Bacteria Resistance

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Supporting Information

Contents

1. Figures

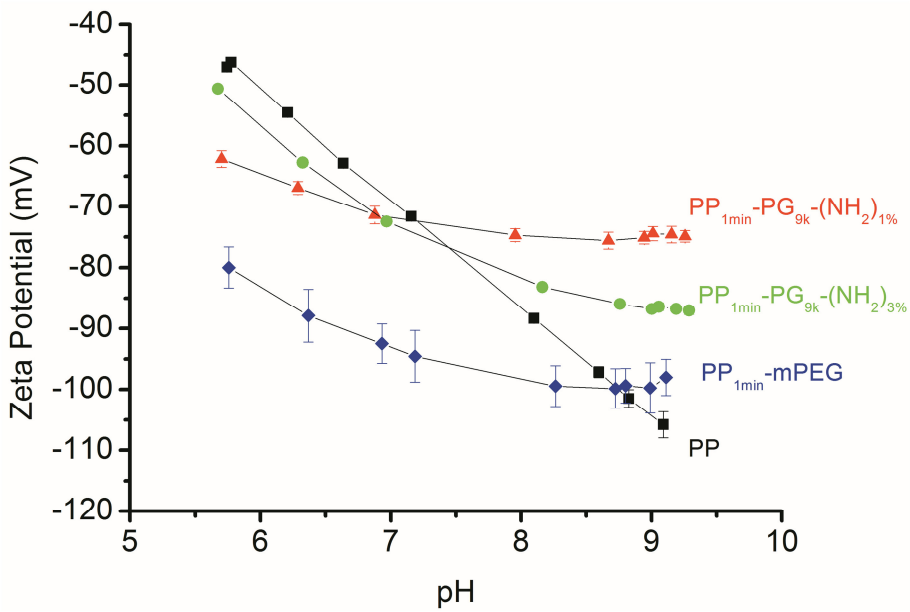

Figure S1. Plot of the surface zeta potential over the pH of bare PP (square, black) and 1 min plasma brominated films PP_{1min}-PG_{9k}-$(NH_2)_{1\%}$ (triangle, red), PP_{1min}-PG_{9k}-$(NH_2)_{3\%}$ (circle, green), and PP_{1min}-mPEG control (rhombus, blue) as measured with an electrokinetic analyzer.

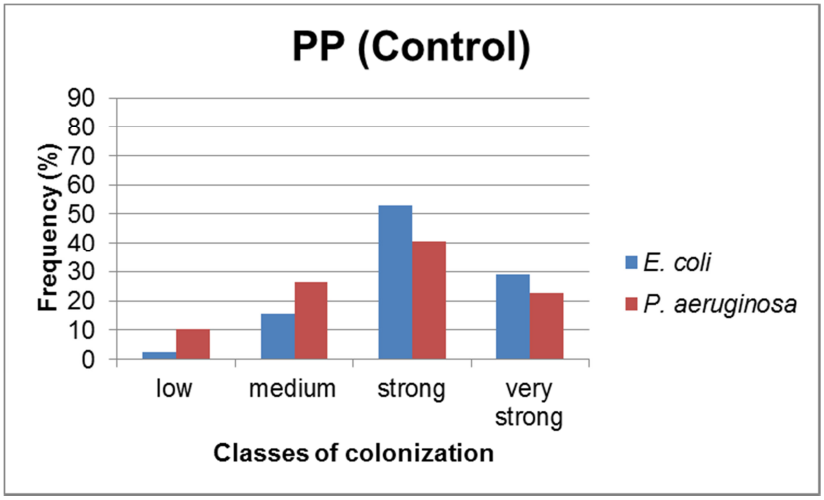

Figure S2. Frequency of classes of bacteria colonization with *E. coli* and *P. aeruginosa* for untreated PP films as control.

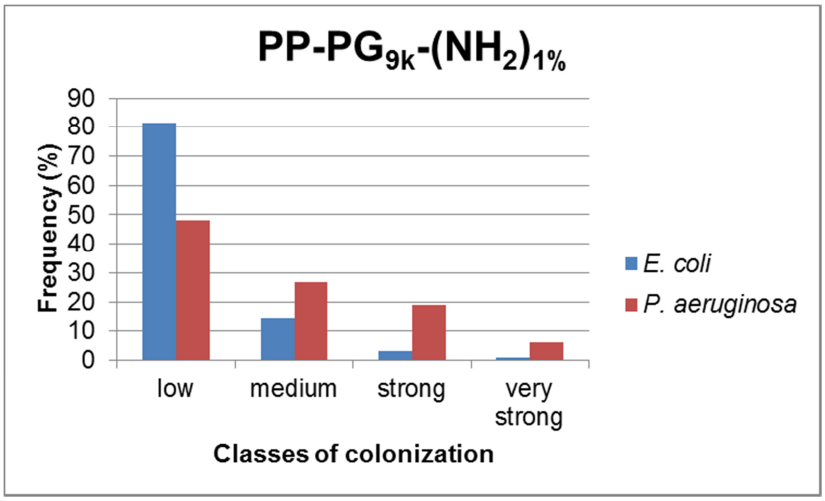

Figure S3. Frequency of classes of bacteria colonization with *E. coli* and *P. aeruginosa* for 3 min plasma brominated PP films coated with PG_{9k}-$(NH_2)_{1\%}$.

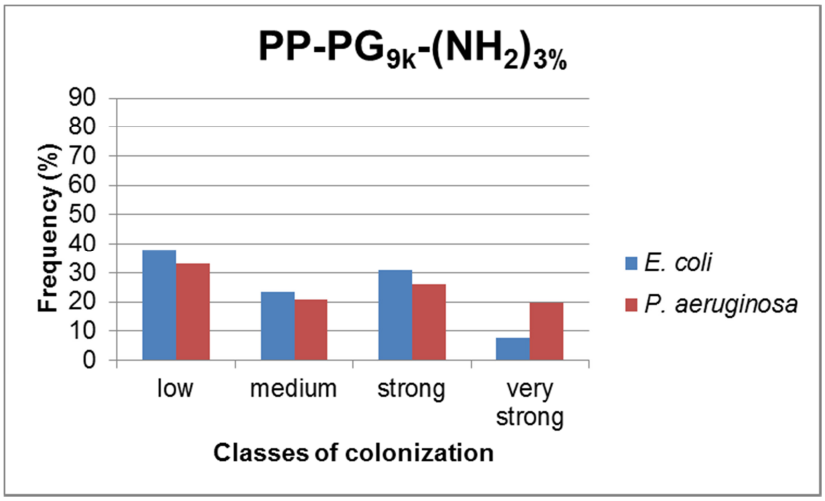

Figure S4. Frequency of classes of bacteria colonization with *E. coli* and *P. aeruginosa* for 3 min plasma brominated PP films coated with PG_{9k}-$(NH_2)_{3\%}$.

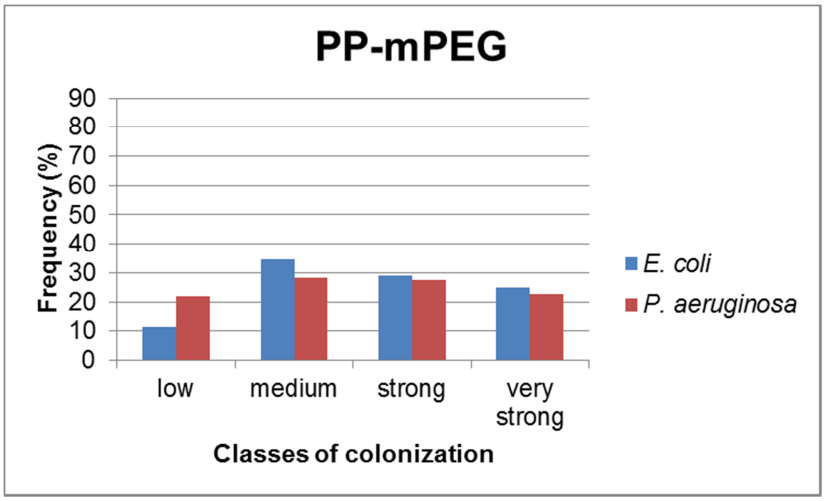

Figure S5. Frequency of classes of bacteria colonization with *E. coli* and *P. aeruginosa* for 3 min plasma brominated PP films coated with mPEG-NH_2.

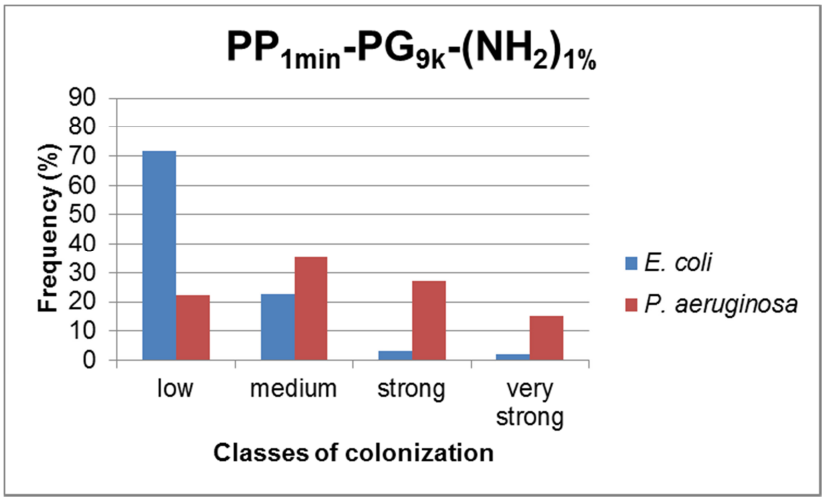

Figure S6. Frequency of classes of bacteria colonization with *E. coli* and *P. aeruginosa* for 1 min plasma brominated PP films coated with PG_{9k}-$(NH_2)_{1\%}$.

2. Toxicity test of the surfaces

Method:

Cytotoxicity of unmodified PP, PP-Br_{3min}, and polymer coated PP films (see legend Figure S7) was evaluated by the xCELLigence real-time cell analyzer (RTCA) from Roche Applied Science (Mannheim, Germany) based on ISO 10993-5:2009 (Biological evaluation of medical devices). In short, A549 cells (adenocarcinomic human alveolar basal epithelial cells) cultured in Dulbecco's Modified Eagle Medium (DMEM) supplemented with 10% fetal bovine serum, 100 U/mL penicillin, and 100 µg/mL streptomycin at 37 °C, 5% CO_2, and 99% humidity were seeded in a 96-well E-plate (10,000 cells/well). The plate was placed in the RTCA and the impedance was measured at least every 15 minutes. After approximately 24 hours the plate was removed from the RTCA. The cell culture medium was replaced by liquid extracts of the uncoated, plasma brominated, and polymer coated PP films (duplicate). Liquid extracts were prepared by incubating a 2 cm x 2 cm piece of each film in 3 mL of supplemented DMEM at 37 °C for 24 hours. Cell culture medium without a PP film and toxic doxorubicin served as controls. The plate was placed back in the RTCA and real-time impedance measurement was continued for another 24 hours. Analysis of the cell viability (% of control) was performed with the GraphPad Prism 5.01 software using end point data obtained from the RTCA.

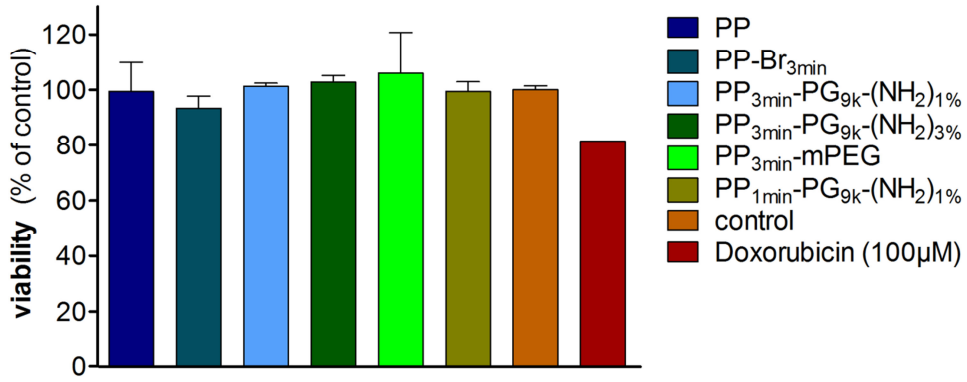

Figure S7. Plot of the viability of the A549 cells after 24 h of incubation with liquid extracts in cell culture medium from the different polymer films (see legend) as determined by the xCELLigence real-time cell analyzer (RTCA).