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Controlled Release from Model Blended Polyelectrolyte Multilayer Films BULENT AKGUN, NIST Center for Neutron Research, NIST, Gaithersburg, MD 20899, YEONGSEON JANG, School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea , SUSHIL SATIJA, NIST Center for Neutron Research, NIST, Gaithersburg, MD 20899, KOOKHEON CHAR, School of Chemical and Biological Engineering, Seoul National University, Seoul, Korea — We propose a new concept of controlled release platforms based on the model blended multilayer films composed of positively charged weak polyelectrolyte (linear poly(ethylenimine),LPEI) layer and blended layer with negatively charged strong (poly(sodium-4-styrene sulfonic acid),PSS) and weak (poly(methacrylic acid),PMAA) polyelectrolytes. The blended multilayer films ((LPEI/PSS:PMAA)$_n$) with well-defined internal structure are prepared by spin-assisted LbL deposition method, and their release behavior is systematically characterized with combined techniques of neutron reflectivity, ellipsometry, AFM, QCM and FT-IR. Since PSS provides the robust skeleton within the multilayer films independently on pH variation, the burst erosion of multilayer films is dramatically suppressed, and the release kinetics of PMAA can be precisely controlled by simply changing PSS contents within the multilayer films.

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