

81e Patterns of Aptamers on Polyelectrolyte Multilayers

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The ionic layer-by-layer (LBL) assembly technique, introduced by Decher in 1991, is a versatile and inexpensive method of constructing polymeric thin films called “Polyelectrolyte Multilayers (PEMs)”, with nanometer-scale control of ionized species. PEMs are excellent candidates for tissue engineering applications due to their biocompatibility and bioinertness, and the ability to incorporate biological molecules, such as proteins. This work describes the successful immobilization and patterning of aptamers on PEM films using electrostatic interaction and covalent crosslinking of nucleic acids on top of thin films. Patterns of thrombin aptamers were formed on PEM surfaces by microcontact printing the nucleic acids onto the PEM surfaces. This technique may be a useful tool for fabricating aptamer arrays to detect and quantitate proteins. Presence and stability of the aptamers on the PEM films were investigated via ellipsometry, FTIR, optical microscope and QCM. Future work will focus on assembling the aptamers to create targeted delivery systems.