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**Controlling the drug release rate from electrospun phospholipid polymer nanofibers with micro-patterned diamond-like carbon (DLC) coating** SOKI YOSHIDA, Department of Mechanical Engineering, Keio University, TERUMITSU HASEBE, Department of Radiology, Tokai University Hachioji Hospital, TETSUYA SUZUKI, ATSUSHI HOTTA, Department of Mechanical Engineering, Keio University — An effective way of controlling drug release from polymer fibers coated with thin diamond-like carbon (DLC) film was introduced. It is highly expected that electrospinning will produce polymer fiber and useful for drug delivery systems. The drug release rate should be rather precisely controlled in order to prevent side effects due to the burst drug-release from polymers. Our previous research has already revealed that the micro-patterned DLC could control the drug release rate from biocompatible polymer films. In this study, the drug release profile of the polymer fibers with DLC was investigated. Hydrophilic 2-methacryloyloxyethyl phosphorylcholine (MPC) was selected as a typical biocompatible polymer. It is well known that the MPC polymers show good hemocompatibility and that both MPC and DLC are excellent biocompatible materials with antithrombogenicity. The DLC/MPC composites could therefore be extensively utilized for blood-contacting medical devices. The percentile covered area with patterned DLC on MPC fibers containing drug was varied from 0% (without DLC) to 100% (fully covered). It was found that the drug eluting profiles could be effectively controlled by changing the covered area of micro-patterned DLC coatings on MPC.

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