References on the Use of LACTEL® Polymers
for Electrospinning / Electrospraying Applications

L0111 Liu G, Miao X, Fan W, Crawford R, Xiao Y. Porous PLGA microspheres effectively loaded with BSA protein by electrospraying combined with phase separation in liquid nitrogen. Journal of Biomimetics, Biomaterials, and Tissue Engineering 2010; 6:1-18. >>> Poly(DL-lactide-co-glycolide); 75/25; 0.55-0.75 dL/g in CHCl₃; Drug delivery (microspheres, bovine serum albumin); Electrospraying; graphic of emulsion technique fig 1 p. 3.

L0109 Almeria B, Deng W, Fahmy TM, Gomez A. Controlling the morphology of electrospray-generated PLGA microparticles for drug delivery. Journal of Colloid and Interface Science 2010; 343(1):125-133. >>> Poly(DL-lactide-co-glycolide); 50/50; 0.55 - 0.75 dL/g (Mw = 53.8 kDa) in TFE; Drug delivery (microparticles); Electrospray drying.

L0094 Hashi CK, Derugin N, Janairo RRR, Lee R, Schultz D, Lotz J et al. Antithrombogenic Modification of Small-Diameter Microfibrous Vascular Grafts. Arteriosclerosis, thrombosis, and vascular biology 2010; 30(8):1621-1627. >>> Poly(L-lactide); 1.09 dL/g IV; Tissue engineering (vascular graft); Rat (female, SD, 200-240 grams); Grafts were made by electrospinning polymer fibers onto a rotating mandrel; actual images of grafts in vivo, p. 1624; "The microfibrous grafts were integrated well into native vasculature, supported by the evidence of angiogenesis and SMC recruitment in the outer layer of the graft." p. 1626; "The slow degradation rate of biopolymers, such as PLLA, maintains the mechanical strength of the grafts long enough and allows gradual replacement of synthetic scaffolds by native matrix with time." p. 1627.

L0090 Khan MS, Fon D, Li X, Tian J, Forsythe J, Garnier G et al. Biosurface engineering through ink jet printing. Colloids and Surfaces B: Biointerfaces 2010; 75(2):441-447. >>> Poly(ε-caprolactone); Tissue engineering (scaffold, nanofiber); Tissue scaffold; "bioprinting has the capability to become a rapid and accurate process of generating NGF concentration gradient patterns for controlling neuron growth." p. 441; PCL was dissolved in a solvent mixture consisting of chloroform and methanol; proteins were printed on the polymeric scaffolds; electrospun nanofiber.

L0061 Yang H, Dong L. Selective Nanofiber Deposition Using a Microfluidic Confinement Approach. Langmuir 2009; 26(3):1539-1543. >>> Poly(DL-lactide); n/a; 0.69 dL/g; Biomaterial (nanofiber); In vitro; n/a; Electrospun nanofibers; a novel method to realize the formation of microsized, structurally accurate, arbitrarily shaped patterns of both random and aligned nanofibers.

L0018 Tillman BW, Yazdani SK, Lee SJ, Geary RL, Atala A, Yoo JJ. The in vivo stability of electrospun polycaprolactone-collagen scaffolds in vascular reconstruction. Biomaterials 2009; 30(4):583-588. >>> Poly(ε-caprolactone); 1.77 dL/g; Biomaterial (scaffold); Rabbit (aortoiliac bypass model, new zealand); >1 month; Electrospinning; "results indicate that electrospun scaffolds support adherence and growth of vascular cells under physiologic conditions and that endothelialized grafts resisted adherence of platelets when exposed to blood;" collagen/PCL composite material used; implanted grafts were 4 cm in length; color image of scaffold on p. 586.
L0017  Lee JY, Bashur CA, Goldstein AS, Schmidt CE. Polypyrrole-coated electrospun PLGA nanofibers for neural tissue applications. Biomaterials 2009; 30(26):4325-4335. >>> Poly(DL-lactide-co-glycolide); 75/25; 0.55-0.75 dL/g; Tissue engineering (nanofibers); in vitro; Neuronal tissue scaffolds; electroconducting nanofibers.

L0098  Lee SJ, Oh SH, Liu J, Soker S, Atala A, Yoo JJ. The use of thermal treatments to enhance the mechanical properties of electrospun poly (ε-caprolactone) scaffolds. Biomaterials 2008; 29(10):1422-1430. >>> Poly(ε-caprolactone); 1.77 dL/g in CHCl3 at 30 C; Biomaterial (nanofiber scaffold); Electrospinning; tissue engineering; "this study suggests that the introduction of thermal fiber bonding to electrospun PCL scaffolds improved the biomechanical properties of these scaffolds, making them more suitable for tissue engineering applications." p. 1422; "After thermal fiber bonding of the electrospun PCL scaffolds, elongation at break as well as the tensile strength of the scaffolds were improved." p. 1428.

L0053  Choi JS, Lee SJ, Christ GJ, Atala A, Yoo JJ. The influence of electrospun aligned poly (ε-caprolactone)/collagen nanofiber meshes on the formation of self-aligned skeletal muscle myotubes. Biomaterials 2008; 29:2899-2906. >>> Poly(ε-caprolactone); 1.77 dL/g in CHCl3 at 30 C; Biomaterial (nanofiber mesh); In vitro; Schematic illustration of the electrospinning setup p. 2900.

L0048  Ekaputra AK, Prestwich GD, Cool SM, Hutmacher DW. Combining electrospun scaffolds with electrosprayed hydrogels leads to three-dimensional cellularization of hybrid constructs. Biomacromolecules 2008; 9:2097-2103. >>> Poly(ε-caprolactone); Biomaterial (scaffold); Electrospun scaffolds.


L0089  Patel S, Kurpinski K, Quigley R, Gao H, Hsiao BS, Poo MM et al. Bioactive nanofibers: synergistic effects of nanotopography and chemical signaling on cell guidance. Nano Lett 2007; 7(7):2122-2128. >>> Poly(L-lactide); 1.09 dL/g IV; Tissue engineering (scaffold, nanofiber); In vitro; Electrospun scaffold; "electrospinning technology can be used to fabricate nonwoven nanofibrous scaffolds from biological and/or synthetic polymers and has tremendous potential for tissue engineering applications." p. 2122.

L0086  Park K, Ju YM, Son JS, Ahn KD, Han DK. Surface modification of biodegradable electrospun nanofiber scaffolds and their interaction with fibroblasts. Journal of Biomaterials Science, Polymer Edition 2007; 18(4):369-382. >>> Poly(glycolic acid); Biomaterial (scaffold); Electrospun, nanofiber scaffold; "fibroblast proliferation was found to be much better on the surfacemodified nanofibrous scaffolds." p. 369; PGA.

L0005  Bashur CA, Dahlgren LA, Goldstein AS. Effect of fiber diameter and orientation on fibroblast morphology and proliferation on electrospun poly (D, L-lactic-co-glycolic acid) meshes. Biomaterials 2006; 27(33):5681-5688. >>> Poly(DL-lactide-co-glycolide); 75/25; 0.55-0.75 dL/g; Tissue engineering (scaffold mesh); Engineered ligament tissues; electrospinning; scaffold mesh; although PLGA is a well characterized, biocompatible, resorbable material used in many tissue-engineering applications, its tendency to deform plastically under applied strains undermines its suitability for ligament tissue engineering. Degradable elastomeric materials, such as poly(esterurethane)ureas and poly(e-caprolactone-co-lactide) may prove more applicable.

membranes. Annals of surgery 2004; 240(5):910. Poly(DL-lactide-co-glycolide); 75/25; 0.55-0.75 dL/g; Tissue engineering (tissue membrane); Rat; Electrospun bioabsorbable nanofibrous Poly(lactide-co-glycolide)-based membranes for prevention of postsurgery-induced abdominal adhesions; membranes of poly(lactide-co-glycolide) were effective to reduce adhesions at the site of injury using an objective rat model; comparison of PLGA and PLGA/PEG-PLA polymer blend (85:15 by weight).

L0009 Zong X, Ran S, Kim KS, Fang D, Hsiao BS, Chu B. Structure and morphology changes during in vitro degradation of electrospun poly (glycolide-co-lactide) nanofiber membrane. Biomacromolecules 2003; 4(2):416-423. Poly(DL-lactide); poly(DL-lactide-co-glycolide); 75/25; 0.55-0.75 dL/g; Biomaterial (nanofiber); In vitro; Electrospun poly(DL-lactide-co-glycolide) nanofiber membrane; "water may have little effect on the shrinkage of electrospun PLGA membranes." (p. 418); degradation research.