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Novel biocompatible and biodegradable ultrathin films of poly (L-Lactic acid) by plasma polymerization YI-HSIN CHANG, CHUN-CHIH CHANG, YING-CHU CHEN, A. C.-M. YANG, Department of Materials Science and Engineering, National Tsing Hua University, Hsinchu, Taiwan, Y. C. LIU, Department of Life Science, National Tsing Hua University, Hsinchu, Taiwan — Ultra-thin films ($\leq$ 50 nm) of biodegradable poly (L-lactic acid) were prepared through efficient RF plasma synthesis. The surface morphology of deposited films was amorphous and molecularly uniform (Ra = 0.7 nm). The chemical compositions as determined from FTIR and NMR demonstrated extraordinarily high retention of ester groups with a small fraction of chain cross-linking that could be controlled by process parameters. The chemical routes of the polymerization were described and discussed. This versatile thin film coating technique is very useful for surface engineering of general biomedical devices and implants for improved biocompatibility. In addition, PLLA polymerized in the liquid phase by plasma was also explored and will be presented. This work is supported by National Science Council of Taiwan.

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