

研究论文

聚丙烯表面的生物相容性修饰: 表面氨基放大还原胺化接枝磷酸胆碱

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**摘要** 在氨气氛中对聚丙烯薄膜表面进行等离子处理, 获得了不同浓度的表面氨基. 表面氨基的数量经1,6-己二异氰酸酯键合三(2-氨基乙基)胺可成倍增加.

用还原胺化法将磷酸胆碱醛共价接枝到表面氨基上获得了磷酸胆碱改性的聚丙烯薄膜. X射线光电子能谱(XPS)测定结果表明, 接枝磷酸胆碱基团的表面覆盖率可达20%~40%. 衰减全反射傅立叶变换红外(ATR-FTIR)

和动态接触角测定结果也都说明磷酸胆碱基团被成功地接枝于聚丙烯表面.

还原胺化法结合等离子处理及表面氨基放大技术, 有望成为获取新型生物材料的一种有效途径.

**关键词** [磷酸胆碱](#) [还原胺化](#) [表面氨基放大](#) [生物相容性](#) [聚丙烯膜](#)

分类号

## Surface Amino Amplification and Graft with Phosphorylcholine by Reductive Amination

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**Abstract** Polypropylene film surface was grafted with amino groups by using a radio-frequency glowing discharge system fed with ammonia. The number of the surface amino groups was amplified by bonding tris-(2-aminoethyl)amine through the linker of 1,6-diisocyanatohexane. Phosphorylcholine (PC) bearing aldehyde functionality was covalently bonded with the surface amino group by reductive amination. Surface composition was determined by X-ray photoelectron spectroscopy (XPS). The grafted PC groups can cover 20%~40% of the surface. The success of the modifications was also supported by attenuated-total-reflectance Fourier-transform infrared spectroscopy (ATR-FTIR) and dynamic contact angle measurements. These methods of surface amino amplification and the subsequent coupling of PC-containing aldehyde molecules are promising ways of obtaining novel biomaterials.

**Key words** [phosphorylcholine](#) [reductive amination](#) [surface amino amplification](#) [biocompatibility](#) [polypropylene film](#)

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