

王亚明

报告人简介:

王亚明，男，博士，博士生导师，郑州大学首批省级学科特聘教授，河南省教育厅学术技术带头人，河南省中青年骨干教师。现任郑州大学橡塑模具国家工程研究中心教授委员会主任、材料成型及模具技术教育部重点实验室副主任。1990年本科毕业于电子科技大学应用化学专业；1995年硕士毕业于吉林工学院化学工程系；1998年博士毕业于中国科学院，固体物理研究所。2003-2007年先后在葡萄牙米尼奥大学(U. Minho)、德国高分子研究所(DKI)从事博士后工作。主要从事聚乳酸基生物降解塑料的形态结构调控、功能化及应用研究。主持国家自然科学基金项目3项。迄今为止在 *Macromolecules*、*Macromolecular Rapid Communications*、*Soft Matter*、*Polymer* 等国际学术杂志上发表论文 50 多篇。



Yaming Wang

Profile of the Author:

Yaming Wang, Male, PhD, Professor of Zhengzhou University. He is now the chairman of the committee of professors in National Engineering Research Center for Advanced Polymer Processing Technology, deputy director of Key Laboratory of Advanced Materials Processing & Mold (Ministry of Education), Zhengzhou University. He graduated from University of Electronic Science and Technology of China with the major of applied chemistry in 1990. He received his Master Degree from Jilin Institute of Engineering in 1995 and PhD from the Institute of Solid State Physics in Chinese Academy of Sciences in 1998. He worked as a postdoc at University of Minho in Portugal and Institute of Polymers in Germany from 2003 to 2007. His main research interest focuses on the structural and morphological tailoring, functionalizing and applications of poly(lactic acid) based biodegradable polymers. Up to now, he has published 50+ papers in the international journals such as *Macromolecules*, *Macromolecular Rapid Communications*, *Soft Matter*, and *Polymer*.

灭菌对工业级 PLA、PBAT 及其共混物性能的影响

赵玉平、王亚明*、刘春太

郑州大学橡塑模具国家工程研究中心，郑州 450002

一次性通用医疗用具量大、面广，市场需求量增长迅速。但是，这些医疗用具基材绝大多数采用 PVC、PP、ABS、热塑性弹性体（TPE）等不可降解高分子材料，使用后形成生物污染和长期的环境污染。采用生物降解高分子材料替代传统的非降解医疗用具基材是保护环境、可持续发展的必然要求。医疗用具基材需要能耐受灭菌消毒处理。本工作研究了环氧乙烷、饱和蒸汽、过氧化氢等离子、电子束灭菌处理对工业级 PLA、PBAT 及其共混物的透光性、尺寸稳定性、黄变指数、力学性能的影响。

Effect of sterilizations on the properties of commercial PLA, PBAT, and their blends

Yuping Zhao, **Yaming Wang***, Chuntai Liu

*National Engineering Research Center for Advanced Polymer Processing Technology,
Zhengzhou University, Zhengzhou 450002, China*

The disposable medical devices are used with a large amount of consumption and in a wide range, and the market demand is increasing rapidly. However, most of the matrices used for medical devices such as polyvinyl chloride (PVC), polypropylene (PP), acrylonitrile butadiene styrene (ABS), and thermal plastic elastomer (TPE) are not compostable, leading to long-term biological and environmental pollutions after used. It is an inevitable requirement of the environmental protection and sustainable development by replacing the non-biodegradable matrices for the biodegradable ones. In this presentation, the effect of various sterilization methods such as ethylene oxide gas (EtO), saturated steam (SS), electron beam (EB), and hydrogen peroxide gas plasma (HPGP) on the properties of commercial PLA, PBAT and PBAT/PLA blends were investigated. The effect of sterilization on the transparency, dimensional stability, yellowness index, and mechanical properties were evaluated.