

全国中文核心期刊

2020年6月 第41卷 第11期

主管单位：中国兵器装备集团有限公司

主办单位：中国兵器工业第五九研究所

# 包装工程

Packaging Engineering



- 封面文章：全印制柔性应变传感器的原理与智能包装应用
- 作者：吴伟

# 包装工程

BAOZHUANG GONGCHENG

第41卷 第11期 2020年6月10日

## 目次

---

### 农产品贮藏加工

---

- 樱桃番茄果脯的无硫复合护色工艺优化  
姚舒婷, 周声怡, 吴文艳, 刘东红, 叶兴乾 1
- 精准相温结合mMA对杨梅挥发性成分的影响  
李依依, 张鹏, 张鹤, 李春媛, 王毓宁, 李江阔 8
- 糖渍处理对玫瑰花醇提取物自由基清除活性的影响  
徐乾达, 陈琳, 何强, 曾维才 17
- 超微粉碎对苦荞物化性质的影响  
许青莲, 岳天义, 张萍, 王丽, 郭铮祥, 邢亚阁, 周光朝 25
- 1-MCP和蜂胶对水蜜桃贮藏保鲜效果的影响  
朱明涛, 王美军 33
- 干燥温度对萝卜品质的影响及动力学模型建立  
曹东, 邢亚阁, 杨华, 曹琳, 岳天义, 李华仙, 袁先铃 40

---

### 食品流通与包装

---

- 山梨酸钾包装对猕猴桃贮藏品质的影响  
韩祥稳, 周游, 陈亚婷, 曹崇江 46
- 常温下功能集成包装袋在甜玉米保鲜中的应用  
刘辉, 李东立, 许文才, 陈蕴智 53
- 蒙脱土与MFC涂层对聚丙烯膜阻隔性能的影响  
孙令泽, 陈蕴智, 张正健, 赵菲 59
- 四种涂膜材料在芒果贮藏保鲜中的应用研究进展  
卫赛超, 谢晶 64

---

### 缓冲与隔振

---

- 某型包装箱跌落动力学仿真分析  
袁惠群, 付凡, 杨淑良, 秦俊生 72
- 三角形蜂窝异面动态压缩仿真研究  
孙德强, 李钟波, 谭一, 李国志 78
- 基于单板的木塑复合板材制备及包装应用性能研究  
曹旭东, 赵妍, 母军 85
- 三角瓦楞缓冲衬垫设计及缓冲性能研究  
刘武, 钟云飞 90
- 一种可折叠环保型包装箱的结构设计与分析  
孙军艳, 陈智瑞, 杨国瑞, 杨伊辰, 徐良 96

---

### 新材料技术

---

- 不同抗氧化剂对聚乙烯醇复合膜性能的影响  
李倩文, 王智慧, 周硕威, 张楚娟, 江晓琪 104
- 木薯膳食纤维可食性包装膜制备与性能研究  
赵含宇, 祁明辉, 易锁, 宗梦婷, 黄丽婕, 黄崇杏, 覃杨华 112

大豆分离蛋白膜制备及改性研究的现状和应用	汪洲, 徐淑艳, 孙巧歌, 胡莺, 李皓毅, 赖丽云	119
添加花生秸秆的无胶纤维板的制备工艺及优化	潘青青, 吴定橙, 单伟雄, 向红	127
桉木单板剩余物定向刨花板的制备	柯少秋, 张凯, 何中天, 农育红, 莫英, 程芳超	135
水性银墨基墨的粒径影响因素研究	彭辰晨, 邢洁芳, 刘玉娇, 季韩森, 闫继芳, 魏先福, 黄蓓青	145
基于PP模型的喷墨打印纸质量评价	赵静远, 葛嘉慧, 熊智新, 梁龙	151

## 工艺与装备

全印制柔性应变传感器的原理与智能包装应用	吴伟	156
基于P-Rob六自由度机械臂运动学建模与仿真	张昌, 武玉强	166
钢筋连接套自动包装生产线设计	朱金达, 高思齐, 崔洪斌, 刘庆磊, 刘兆奂	174
香蕉套袋绑紧防护装置的设计和研究	任晓智, 孙迪, 薛山, 崔建昕, 范业增, 许志强, 林志	181
空间4R球面机构作为转动副的3RPS并联机构运动学分析	刘伟, 曹亚斌	189
基于改进内模的纸浆浓度控制	刘青震, 王文标, 汪思源, 王靖	196
快递包装回收网络中回收点选址研究	周晓晔, 任贵彬, 马小云, 朱梅琳, 钟宇	201
面向多点卸货的箱柜类货物的装箱策略研究	桂黎红, 李俚	209
基于机器视觉的包装物料自动筛选系统	李洪波, 李亚萍	214
包装印刷设备的烘干风嘴分布参数规律研究	黄卿	219
基于减量原则的炎陵黄桃包装设计	魏专, 龙佳宁	227
基于能量分析的拎手绳打结研究	朱阳	233

## 图文信息技术

基于生成对抗网络的压缩感知图像重构方法	简献忠, 张雨墨, 王如志	239
基于生成对抗网络的风格化书法图像生成	王晓红, 卢辉, 麻祥才	246
光谱反射率重建技术的研究进展	王文举, 王江薇	254

## 广告索引

封二 普拉斯包装材料有限公司  
封三 中国兵器工业第五九研究所包装工程技术研究中心

### 插页

A1 国防科技工业自然环境试验研究中心  
A2 中国包装容器展  
A3 装备环境工程杂志

# PACKAGING ENGINEERING

(Initial Issue 1980) (Semimonthly) Vol.41 No.11(Total No.425) Jun. 10, 2020

## Contents

---

### Storage and Processing of Agricultural Products

---

Optimization of Sulfur Free Compound Color Protection Technology for Preserved Cherry Tomato

*YAO Shu-ting, ZHOU Sheng-yi, WU Wen-yan, et al.* 1

Effects of Accurate Phase Temperature with mMA on Volatile Components of *Myrica Rubra*

*LI Yi-nong, ZHANG Peng, ZHANG He, et al.* 8

Effects of Sugaring Process on the Free Radical Scavenging Activity of Rose Extract

*XU Qian-da, CHEN Lin, HE Qiang, et al.* 17

Effects of Superfine Grinding on Physicochemical Properties of Tartary Buckwheat

*XU Qing-lian, YUE Tian-yi, ZHANG Ping, et al.* 25

Effects of 1-MCP and Propolis on the Preservation Results of Honey Peaches

*ZHU Ming-tao, WANG Mei-jun* 33

Effect of Drying Temperature on the Quality of Radish and Establishment of Kinetic Model

*CAO Dong, XING Ya-ge, YANG Hua, et al.* 40

---

### Food Distribution and Packaging

---

Effects of Potassium Sorbate Packaging on the Storage Quality of Kiwifruit

*HAN Xiang-wen, ZHOU You, CHEN Ya-ting, et al.* 46

Application of Functional Integrated Packaging Bag in Preservation of Sweet Corn at Normal Temperature

*LIU Hui, LI Dong-li, XU Wen-cai, et al.* 53

Effect of Montmorillonite and MFC Coating on the Barrier Properties of Polypropylene Film

*SUN Ling-ze, CHEN Yun-zhi, ZHANG Zheng-jian, et al.* 59

Advances in Application of Four Coating Materials in Storage and Preservation of Mango

*WEI Sai-chao, XIE Jing* 64

---

### Cushioning and Vibration Isolation

---

Drop Kinetics Simulation of a Packaging Box

*YUAN Hui-qun, FU Fan, YANG Shu-liang, et al.* 72

Simulations of Out-of-plane Dynamic Compressions of Triangular Honeycomb Cores

*SUN De-qiang, LI Zhong-bo, TAN Yi, et al.* 78

Preparation and Packaging Application Properties of Wood-plastic Composite Sheet Based on Veneer

*CAO Xu-dong, ZHAO Yan, MU Jun* 85

Design and Cushioning Performance of Triangular Corrugated Cushioning Insert

*LIU Wu, ZHONG Yun-fei* 90

Structural Design and Analysis of a Foldable Environmentally Friendly Packaging Box

*SUN Jun-yan, CHEN Zhi-rui, YANG Guo-rui, et al.* 96

---

### Advanced Materials Technologies

---

Effects of Different Antioxidants on Properties of PVA Composite Films

*LI Qian-wen, WANG Zhi-hui, ZHOU Shuo-wei, et al.* 104

Preparation and Properties of Edible Packaging Film by Cassava Dietary Fiber	<i>ZHAO Han-yu, QI Ming-hui, YI Tan, et al.</i>	112
Current Situation and Application of Preparation and Modification of Soy Protein Isolate Film	<i>WANG Zhou, XU Shu-yan, SUN Qiao-ge, et al.</i>	119
Preparation Technology and Optimization of Peanut Straw Fiberboard without Adhesive	<i>PAN Qing-qing, WU Ding-cheng, SHAN Wei-xiong, et al.</i>	127
Preparation of Oriented Strand Board Based on Eucalyptus Veneer Residue	<i>KE Shao-qiu, ZHANG Kai, HE Zhong-tian, et al.</i>	135
Influencing Factors of Particle Size of Water-based Silver Ink Paste	<i>PENG Chen-chen, XING Jie-fang, LIU Yu-jiao, et al.</i>	145
Quality Evaluation of Inkjet Printing Paper Based on PP Model	<i>ZHAO Jing-yuan, GE Jia-hui, XIONG Zhi-xin, et al.</i>	151

---

## Process and Equipment

---

Mechanisms and Application of Fully-printed Flexible Strain Sensors for Smart Packaging	<i>WU Wei</i>	156
Kinematics Modeling and Simulation of Six Degrees of Freedom Manipulator Based on P-rob	<i>ZHANG Chang, WU Yu-qiang</i>	166
Design of Packaging Production Line for Steel Bar Connecting Sleeve	<i>ZHU Jin-da, GAO Si-qi, CUI Hong-bin, et al.</i>	174
Design and Research of Electric Banana Bagging Binding Device	<i>REN Xiao-zhi, SUN Di, XUE Shan, et al.</i>	181
Kinematics Analysis of 3RPS Parallel Mechanism with Spatial 4R Spherical Mechanisms as Rotating Pairs	<i>LIU Wei, CAO Ya-bin</i>	189
Pulp Concentration Control Based on Improved Internal Mold	<i>LIU Qing-zhen, WANG Wen-biao, WANG Si-yuan, et al.</i>	196
Location Selection of Recycling Points in Express Packaging Recycling Network	<i>ZHOU Xiao-ye, REN Gui-bin, MA Xiao-yun, et al.</i>	201
Packaging Strategy of Furniture Goods for Multi-point Unloading	<i>GUI Li-hong, LI Li</i>	209
Automatic Screening System of Packaging Materials Based on Machine Vision	<i>LI Hong-bo, LI Ya-ping</i>	214
Rule for the Distribution Parameters of Air Nozzles in Packaging Printing Equipment	<i>HUANG Qing</i>	219
Packaging Design of Yanling Yellow Peaches Based on Reduction Principle	<i>WEI Zhuan, LONG Jia-ning</i>	227
Knotting of Hand Rope Based on Energy Analysis	<i>ZHU Yang</i>	233

---

## Graphic Information Technology

---

Compressed Sensing Image Reconstruction Method Based on Generative Adversarial Network	<i>JIAN Xian-zhong, ZHANG Yu-mo, WANG Ru-zhi</i>	239
Generation of Stylized Calligraphic Image Based on Generative Adversarial Network	<i>WANG Xiao-hong, LU Hui, MA Xiang-cai</i>	246
Research Progress of Spectral Reflectance Reconstruction Technology	<i>WANG Wen-ju, WANG Jiang-wei</i>	254