



Y形纤维截面特征参数的自动测量及分析系统

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Automatic measuring and analyzing system for characteristic parameters of cross section of Y-Shape fiber

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摘要 传统的异形纤维异形度检测方法已经不能满足现今异形纤维生产的需要, 数字图像处理技术以其独特的优势在纤维截面分析、特征参数测量等领域得到了应用。本文运用VB研发了Y形纤维截面特征参数的自动测量及分析系统。系统通过一点法、手动修补、三点法等边缘检测方法获取纤维的截面, 自动提取其面积、周长、外接圆、内切圆等特征参数, 完成纤维各异形度指标的计算。并将异形度的检测结果与其相匹配的浆液水分、浆液温度、浆液预热温度等工艺参数输出为Excel报表形式, 实现Y形纤维纺丝工艺与纤维异形度指标的相关性等工艺分析。结果显示, 系统实用性较好, 对于纤维异形度测量具有较高的精度和测试效率, 系统提供的工艺自动分析功能有利于优化Y形纤维的制造工艺。

关键词: 纤维截面 异形度 特征参数 异形纤维

Abstract: The traditional measuring method for the shape factors of profile fibers could not meet the requirements of current producing of profile fibers. The technology of digital image processing is widely used in analyzing of fiber cross section and in measuring of the section characteristic parameters for its unique advantage. An automatic measuring and analyzing system for characteristic parameters of cross section of Y shape fiber is developed based on VB platform and presented in this paper. The fiber cross section boundary and other parameters, such as area, circumference, circumscribed circle, inscribed circle and etc. can be obtained by using the boundary detection approach, including one point method, manual repairing, three point method and etc. Then the fiber shape factors are automatically calculated. The measuring data of fiber shape factors and corresponding processing parameters, including size moisture, size temperature and preheating temperature of size, can be output in the form of Excel list. The analysis of relevancy between fiber shape factors and spinning processing of fiber is also realized. It shows that the system can provide good measuring precision and high efficiency. And its function of automatic analysis is of benefit to optimization of processing of Y shape fibers.

Key words: fiber section shape factor characteristic parameter profile fiber

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