

综述

LED在农业与生物产业的应用与前景展望

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摘要:

随着光电技术的发展,LED在农业与生物领域的应用正逐渐受到世界各国的广泛关注。LED不仅具有体积小、寿命长、耗能低、波长固定与低发热等优点,而且还能根据植物需要进行发光光谱的精确配置,实现传统光源无法替代的节能、环保和空间高效利用等功能。通过对LED在农业与生物领域研究现状的详细阐述,重点介绍了LED的光源特性及其在设施栽培、组织培养、植物工厂和太空农业等方面的应用进展,并对LED在人工补光、植物工厂、生命保障系统以及与新能源结合等方面的应用前景进行了分析和展望。

关键词: 人工光源 发光二极管(LED) 农业 生物产业

Application and Prospect of Light-Emitting Diode (LED) | in Agriculture and Bio-industry

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Abstract:

The application of light-emitting diode (LED) in agriculture and bio-industry has been concerned by all over the world along with the development of LED technology. LED not only has many advantages, such as small size, long life, low energy consumption, securing wavelength and low production of heat, but also can emit the exact spectrum based on the need of plant. LED can actualize a lot of functions, such as energy-saving, environment-protection and efficient space utilization, which can not be achieved by conventional light source. This paper expounds in detail the application of LED in agriculture and bio-industry, with emphasis on the characteristics of LED and the progress on its application in plant cultivation, tissue culture, plant factory and controlled ecological life supporting system (CELSS). It also analyzes and prospects the trends of LED applied in artificial lighting, plant factory, CELSS and the combination with new energy sources.

Keywords: artificial lighting light-emitting diode (LED) agriculture bio-industry

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