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夜视技术

一种玻璃成分优化的微通道板

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摘要 降低微通道板（MCP）的离子反馈噪声、
提高像增强器的成像质量和工作寿命是MCP玻璃成分优化研究的主要目标，
指出通过调整碱金属氧化物的引入种类和总量，并采用高温氢还原工艺获得一种玻璃成分得到优化的MCP，
可提高玻璃的转变温度，耐500℃
以上的高温烘烤且电性能相对稳定。该方法改善了通道内壁表面结构和MCP的耐电子冲刷能力，
降低了气体吸附量且易于去除气体。文章最后给出了优化MCP玻璃成分所需开展的工作：在玻璃成分优化上增加SiO2的引入量，调整芯皮玻璃的温度粘度匹配及酸溶速率比，以及开展体导电玻璃MCP和硅MCP的研究。

关键词 微通道板 玻璃成分优化 离子反馈 像增强器
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Microchannel plate with optimized glass composition

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Abstract Glass composition of microchannel plate (MCP) is optimized to reduce the ion feedback noise of MCP and to improve the image quality and lifetime of image intensifier. The MCPs with optimized glass composition were fabricated by introducing different types and amounts of alkaline-metal oxide as well as adopting high-temperature hydrogen reduction technique. The transfer temperature for the glass is increased; it could be baked at the temperature of over 500℃ and remains stable in electrical performance. The result shows that the internal surface structure of the channel is improved, MCP′s resistance to electron scrub is enhanced, and the gas absorbing is decreased. At last, the further research is proposed.

Key words microchannel plate glass composition optimization ion feedback image intensifier

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