

夜视技术

# 一种显著提高三代像增强器信噪比的微通道板

潘京生, 苏德坦, 许志清, 刘术林

北方夜视技术股份有限公司, 南京 211102

收稿日期 修回日期 网络版发布日期 2007-5-10 接受日期

**摘要** 鉴于离子阻挡膜保证了三代像增强器的工作寿命, 但增加了微通道板和三代像增强器的噪声因子, 降低了三代像增强器的信噪比, 削弱了NEA光阴极的优势, 提出一种最新研制的微通道板。它优化了玻璃成份, 提高了玻璃的工作温度, 同时还改善了通道内壁工作面结构, 且开口面积比达到65%~70%。通过三代像增强器制管试验证实, 这种高性能微通道板具有低噪声因子特性, 与标准MCP相比, 可显著提高三代管的信噪比。最后指出通过进一步试验和改进, 实现更高信噪比长寿命无膜三代像增强器的可能性。

**关键词** [像增强器](#) [微通道板](#) [信噪比](#) [噪声因子](#) [高性能微通道板](#)

**分类号** [TN223](#)

## High signal-to-noise ratio MCP for Gen.III image intensifier

PAN Jing-sheng, SU De-tan, XU Zhi-qing, LIU Shu-lin

North Night Vision Tech. Ltd., Corp., Nanjing 211102, China

**Abstract** A new technique of MCP fabrication is proposed for overcoming the disadvantages of noise factor increase, signal-to-noise ratio decrease and NEA photocathode superiority reduction caused by the ion barrier film coated on MCP during the operation lifetime of image intensifier. With the technique, the glass composition is optimized, the operation temperature of the synthetic glass is increased, the inwall structure of the channel is improved, and the open aperture ratio reaches 65%~70%. The experiment results show that the high performance MCP can improve the secondary emission performance while the ion feedback noise is reduced. This MCP can offer an even lower noise figure performance in comparison with the standard MCP, and significantly improve the signal-to-noise ratio of Gen.III image intensifiers. Finally, it is pointed out that the further work on the MCP will make high signal-to-noise ratio and long operation life filmless Gen.III image intensifier possible.

**Key words** [image intensifier](#) [microchannel plate](#) [signal-to-noise ratio](#) [noise figure](#) [high performance MCP](#)

DOI:

通讯作者 潘京生 [jspan130@sina.com](mailto:jspan130@sina.com)

### 扩展功能

#### 本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(174KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献](#)

#### 服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

#### 相关信息

- ▶ [本刊中 包含“像增强器”的相关文章](#)
- ▶ [本文作者相关文章](#)

- [潘京生](#)
- [苏德坦](#)
- [许志清](#)
- [刘术林](#)