

微光技术

酸蚀对微通道板电性能的影响

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摘要 采用扫描电镜 (SEM)、卢瑟福背散射谱 (RBS)、原子力显微镜 (AFM)、能量色散谱仪 (EDS)、照度计、微通道板测试台等分析表征手段, 从微通道板皮料玻璃表面的成分、形貌和结构上, 研究了酸蚀时间对微通道板电子增益、体电阻、噪声电流和电子图像等电性能的影响。研究表明: 酸蚀时间显著影响微通道板的电性能, 经酸蚀 120min 后微通道板的电子增益和图像亮度达到最高值; 随着酸蚀时间的增加, 噪声电流相应增加, 而体电阻降至一定值后保持相对的稳定。

关键词 [微通道板](#) [酸蚀时间](#) [电性能](#)

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Effect of acid etching on electrical performances of microchannel plate

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Abstract Scanning electron microscope (SEM), Rutherford backscattering (RBS), atomic force microscope (AFM), energy dispersive spectrometer (EDS), photometer and microchannel plate (MCP) tester were used to investigate the effect of acid etched time on electron gain, bulk resistance, noise current density, electron image brightness of MCP from the surface composition, morphology and structure of cladding glasses. The results show that the electrical performances of MCP is dependent on acid etching time. The electron gain and image brightness reach their maximum after the acid etching of 120min. The bulk resistance reduces to a certain value and then keeps constant with the increase of the acid-etched time. The noise current density, however, increases with the etching time.

Key words [microchannel plate](#) [etching time](#) [electrical performance](#)

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