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Al/SiC复合材料的准分子激光表面改性

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SURFACE MODIFICATION OF Al/SiC METAL MATRIX COMPOSITE BY EXCIMER LASER

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摘要 利用KrF准分子激光对SiC晶须增强铝基复合材料进行表面改性。借助于显微镜及X射线衍射技术，对激光处理前后试件表层的显微组织及化学结构进行了分析。结果表明，准分子激光处理后，试件表面形成了一个几微米厚的铝层。该薄层中基本上不含金属间化合物，SiC增强相的数量也显著减少。腐蚀测试结果表明，准分子激光表面处理后，材料的抗腐蚀性能得到了显著提高。

关键词： 表面改性 金属基复合材料 准分子激光

Abstract: The surfaces of 2009Al/SiC w metal matrix composite specimens were irradiated with a powerful KrF excimer laser.After laser treatment, the morphology and the structure were examined with the aid of microscope and X ray diffraction techniques.It was found that an aluminium layer a few microns thick was formed on the surface of Al MMC.Little SiC reinforcement and larger intermetallics can be found in this layer.Corrosion measurements showed that the laser modified Al MMC exhibited a higher corrosion resistance.

Keywords: surface modification metal matr ix composite (MMC) excimer laser

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