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## 激光熔覆Ni-Cr-B-Si-C合金的组织及其摩擦磨损特性

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**摘 要:** 运用SEM, TEM及XRD研究了优化工艺条件下获得的激光熔覆F102Ni-Cr-B-Si-C合金粉末涂层的微观组织。结果表明, 涂层区组织为初生铬硼化合物+Ni基胞枝状固溶体+Ni枝晶间析出的碳化物、硼化物和Ni+Ni<sub>3</sub>B或Ni+M<sub>23</sub>C<sub>6</sub>; 结合区组织以Ni+Ni<sub>3</sub>B为主及碳化物和碳硼化物构成的伪多元共晶胞状晶。摩擦磨损试验表明, 激光涂层的摩擦系数(0.21~0.3)比钢基底(0.65~0.8)低得多, 磨损速率约低一个数量级。

**关键字:** 激光熔覆 Ni基合金 微观组织 摩擦磨损

## MICROSTRUCTURES AND FRICTION AND WEAR PROPERTIES OF LASER-CLAD Ni-Cr-B-Si-C ALLOY

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**Abstract:** Microstructures and friction and wear properties of laser-clad Ni-Cr-B-Si-C alloy on steel AISI1045 were investigated with SEM, TEM, XRD and a pin-ring friction and wear testing machine. The coating obtained under optimal process condition possesses two distinct zones, i.e. clad layer(CL) and bonding zone (BZ). The friction coefficient of the coating (0.2~0.3) is much lower than that of the substrate(0.65~0.8). The wear rate of the clad is approximately an order lower than that of the substrate.

**Key words:** laser cladding Ni-based alloy microstructure friction and wear

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