

论文

激光辐照巴基管涂层强化45钢表面

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摘要: 采用激光合金化的方法,利用巴基管涂层可明显强化45钢表面,优化激光加工及后续热处理的工艺参数.巴基管在激光辐照时与Fe发生反应生成Fe<sub>3</sub>C,并且在45钢表面生成一层含(2.5—3.5)%C的亚共晶合金化层.经840℃,10—20min淬火处理,表面硬度可达HRC70,耐磨性能较45钢淬火组织有较大提高

关键词: 巴基管 激光合金化 磨损 淬火

STRENGTHENING STEEL 45 BY BUCKYTUBES UNDER LASER IRRADIATION

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Abstract: Laser alloying technique was employed to strengthen 45 carbon steel surface with buckytube coating and laser processing, and subsequent heat treatment processing parameters were optimized. The experimental results indicated that under the protection of Ar gas, buckytubes could retain their straight vacant form or curl to form bound buckytubes and even decompose to produce Fe<sub>3</sub>C with Fe under the laser irradiation. Furthermore, an alloyed layer, which contents 2.5%-3.5% carbon, could be formed on the carbon steel surface. The hardness of the carbon steel surface could be up to HRC 70 when the sample was quenched after austenitized at 840 °C for 10-20 min. And the wear resistance of the treated surface was increased efficiently.

Keywords: buckytube laser alloying wear and tear quenching

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扩展功能

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