

عنوان مقاله:

Fundamental understanding of crystallization mechanism of laser alloyed tool steel

محل انتشار:

اولین کنفرانس بین المللی و هفتمین کنفرانس ملی مهندسی ساخت و تولید (سال: 1384)

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خلاصه مقاله:

The objective of the present work was to study the modification of the microstructure of hot-work tool steel X40CrMoV5-1 during the surface modifying by means of laser technology. The aim of such treatment was to harden and alloy the steel surface which had been previously coated with tungsten carbide (WC). Development of the surface layer was observed in which one can distinguish the remelted zone, heataffected zone and the transient zone. The fine grained, dendritic structure occurs in the remelted and alloyed zone with the crystallization direction connected with the dynamical heat abstraction from the laser beam influence zone. The fine grained martensite structure is responsible for hardness increase of the alloyed layer. It has the important cognitive significance and gives grounds to the practical employment of these technologies for forming the surfaces of new tools and regeneration of the used ones.

کلمات کلیدی:

hot-work tool steel, gradient coating, alloying, high power diode laser

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