

## عنوان مقاله:

Modeling and optimization of surface quality in turning process on micro-alloy steels using Taguchi method and simulated annealing algorithm

## محل انتشار:

شانزدهمین همایش ملی و پنجمین کنفرانس بین المللی مهندسی ساخت و تولید (سال: 1398)

تعداد صفحات اصل مقاله: 4

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## خلاصه مقاله:

In turning process, determination of the optimal tool geometry and cutting parameters in order to improve the surface quality and reduce the production cost is vital. In this paper, based on experimental results and statistical analysis, one of the most important characteristic (surface quality) in turning process on micro-alloy steels has been modeled and optimized. The process input parameters consist of cutting speed, feed rate, depth of cut, clearance angle and tool radius. The experiments have been carried out on micro-alloy 30SMV6 steel and they have been based on Taguchi experimental design approach. Then regression functions including linear, quadratic and logarithmic models have been fit on the experimental data. Then the best and most fitted model was selected based on the results of statistical analysis. The statistical analysis showed that the linear model for surface quality is the best ones. In the next step of the research, simulated annealing (SA) algorithm has been employed to determine the optimal levels to reach the best surface quality. Finally, for validation test has been performed, and the results showed that the proposed method is quite efficient in modeling and optimization of turning process.

## کلمات کلیدی:

.regression modeling, micro-alloy steel, design of experiment, Taguchi method, simulated annealing algorithm

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