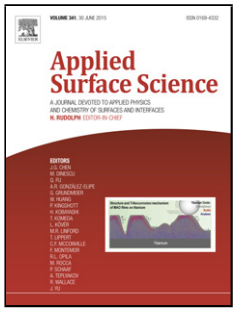

Title: Relation of hardness with FWHM and residual stress of GCr15 steel after shot peening

Authors: Peng Fu, Ruiqing Chu, Zhijun Xu, Guanjun Ding, Chuanhai Jiang

PII: S0169-4332(17)32784-8
DOI: http://dx.doi.org/10.1016/j.apsusc.2017.09.136
Reference: APSUSC 37215

To appear in: *APSUSC*

Received date: 15-2-2017
Revised date: 16-8-2017
Accepted date: 16-9-2017

Please cite this article as: Peng Fu, Ruiqing Chu, Zhijun Xu, Guanjun Ding, Chuanhai Jiang, Relation of hardness with FWHM and residual stress of GCr15 steel after shot peening, Applied Surface Sciencehttp://dx.doi.org/10.1016/j.apsusc.2017.09.136

Relation of hardness with FWHM and residual stress of GCr15 steel after shot peening

Peng Fu [a, b*], Ruiqing Chu [a], Zhijun Xu [a], Guanjun Ding [a], Chuanhai Jiang [b*]

(a School of Materials Science and Engineering, Liaocheng University, Liaocheng, 252059, PR China; b School of Materials Science and Engineering, Shanghai Jiao Tong University, Shanghai 200240, PR China)

*Corresponding author, E-mail: fupeng9806@126.com (P. Fu), Tel: +866358230927; chjiang_sjtu@126.com(C. H. Jiang); Tel.: +86 21 34203096x8208.

Highlights

- Triple shot peening process was carried out on the surface of GCr15 steel.
- The changes of FWHM and CRS during annealing were studied.
- The CRS and micro-structure worked together on the hardness values.
- A new hardness testing method was created by XRD method.

Abstract: The variations of XRD full width at half maximum (FWHM), residual stress and hardness for the surface of GCr15 steel after triple shot peening (TSP) as a function of annealing time and temperature are studied. The results show that with the increase of annealing temperature and time, hardness and FWHM increase gradually while compressive residual stress (CRS) decreases gradually. CRS and micro-structure work together on the hardness values, and the micro-structure is the most important factor for hardness. According to establishing the quantitive relationship of