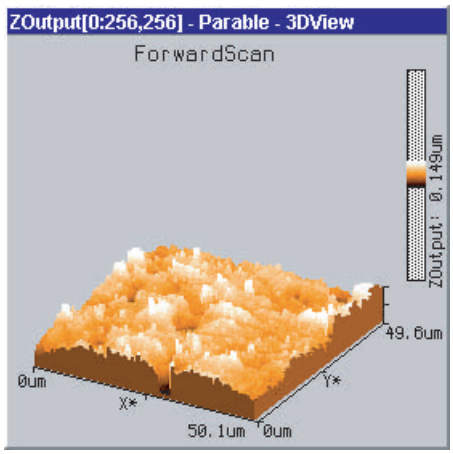
Surface Roughness of Steel Balls for Tribological Testing

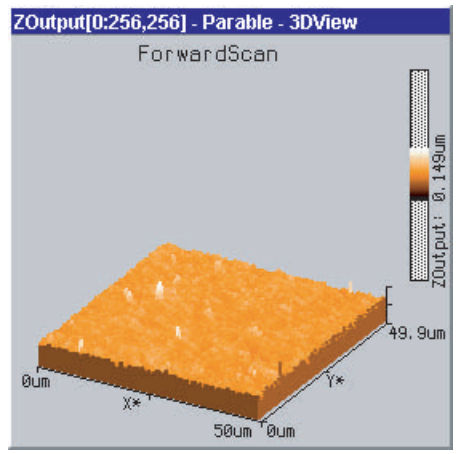
Nanosurf® AFM Application Note

As surfaces for bearing technology become more and more smooth, conventional techniques such as laser or stylus profilometry come to their limits for determining surface quality. But slight differences in surface roughness and structure of bearing components are found to have immense influence on component life and performance.

Therefore AFM measurements are used to assess surface quality parameters such as roughness parameters and nanoscale surface structures.

The images shown below demonstrate that surface quality of steel balls for wear testing still varies widely depending on the manufacturer. While on the left the surface is structured by open pores indicating inferior material quality, the right hand image shows a smoth surface as demanded by high performance applications. Mean surface roughness Sa is 21nm and 6nm, respectively and both balls were sold as the same quality standard.





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