

Abstract Submitted
for the MAR16 Meeting of
The American Physical Society

The Size and Shape dependence of the Surface Free Energy of Nanocrystals ESAM ABDUL-HAFIDH, Yanbu University College — Based on many recent reports, it became possible to control the synthesis of nanomaterials with certain sizes and shapes. A theoretical model to investigate the effect of size and shape on the surface free energy of nanocrystals is worked out in this research. The model is applied to a general shape and size nanocrystal designated by a shape factor. The model considers all nanocrystals with different morphologies (but with the same shape factor) to be the same. The results were tested for gold and silver. The surface free energy was found to decrease with size for spherical nanocrystals. On the other hand, the surface free energy is enhanced for non-spherical nanocrystals. These findings are in qualitative agreement with previous experimental and theoretical predictions. The results pave the road to manufacture controlled-mechanical properties materials.

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Date submitted: 04 Nov 2015

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