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Iron nanoparticles by inert gas condensation

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Document Version

Publisher's PDF, also known as Version of record

Publication date:

2018

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Xing, L. (2018). *Iron nanoparticles by inert gas condensation: Structure and magnetic characterization*. [Thesis fully internal (DIV), University of Groningen]. University of Groningen.

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Propositions

Accompanying the dissertation

Iron nanoparticles by inert gas condensation

Lijuan Xing

1. The whole history of science has been the gradual realization that events do not happen in an arbitrary manner, but that they reflect a certain underlying order, which may or may not be divinely inspired. (Stephen Hawking)
2. The same iron building blocks originating from plasma sputtering can be constructed into nanoparticles with diverse shapes and sizes owing to the subsequent shaping of the environment, i.e. the gas environment and the effective magnetic field configuration. (Chapter 3 and 4)
3. Everything you see exists in a delicate balance, which similarly works in the sputtering of iron. A separation between the iron target and the magnetron is adopted to modify the effective magnetic field configuration upon the target for easy sputtering. Nevertheless, too large separations can result in the loss of sufficient field strength. (Chapter 4)
4. The ferromagnetism of large iron nanoparticles has been confirmed by the reversal of phase contrast with opposite tip polarity, while the boundary between ferromagnetism and superparamagnetism is not yet detected by magnetic force microscopy although it does exist. (Chapter 5)
5. Problems can be preferably solved with reasonable simplifications. Scientific research is a learning process on how to change vague difficulties into specific, concrete forms, which is an essential element in thinking.
6. 逆风的方向更适合飞翔。我不怕千万人阻挡，只怕自己投降。 -- Head wind makes higher flying. One will never be defeated unless he/she surrenders.
7. There are too many rainy and cloudy days in the Netherlands, so we need to have sunshine in our heart to make the pathway bright.
8. In your life there are a few places, or maybe only the one place, where something happened, and then there are all the other places. (Alice Ann Munro)