Stellingen

behorende bij het proefschrift

"Search for shell effects in metallic nanowires"

van A. I. Mares

1. Shell closing effects are generally present in free-electron and nearly-free-electron metal nanowires and influence their stability.
   This thesis (chapters 4, 5, 6)

2. Magic nanowire diameters resulting from shell effects persist under ambient conditions for gold, silver and aluminum.
   This thesis (chapters 4, 5, 6)

3. The low count numbers at low values in the conductance histograms for magnesium may be the result of a transition to a non-metallic state at small nanowire diameters.
   This thesis (chapter 6)

4. Monoatomic chains that are softer grow longer.
   This thesis (chapter 7)

5. The resistance between two macroscopic silver paint contacts placed on the surface of a silver sulphide film can be made to switch between high and low values by the polarity of the applied voltage, at room temperature in air.

6. The nanoswitch described by Terabe et al., based on a sandwich structure of silver, silver sulphide and a metal layer, is more likely the result of a nanowire growing through the silver sulphide layer rather than on top of it.

7. The temperature dependence of the mobility in an organic field effect transistor is influenced by the underlying dielectric.

8. The observation of half-integer conductance quanta for Fe, Co, Ni, and Pt atomic contacts presented in the literature and assigned to a magnetic state of atomic contacts is more likely due to a molecular contamination (e.g. CO) creating a molecular bridge with half-integer conductance.