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**Re: Toestemmingsverzoek tot openbare publikatie van scriptie in scriptierepository FWN**

1 message

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**Palasantzas, G.** <g.palasantzas@rug.nl>  
To: scriptierepositoryfwn@rug.nl

Fri, Jul 15, 2016 at 12:43 PM

Dear Sir

Because this is on going research in our group I would like to postpone this publication for at least for a year.

Best regards, George

On Fri, Jul 15, 2016 at 10:33 AM, Scripties Faculteit Wiskunde en Natuurwetenschappen <[scriptierepositoryfwn@rug.nl](mailto:scriptierepositoryfwn@rug.nl)> wrote:

Geachte heer, mevrouw,

Op 15 juli 2016 heeft Blaauw K. de scriptie Roughness induced superhydrophobicity and capillary control with silver nanoparticles geüpload in de scriptierepository FWN. Hij/zij heeft daarbij aangegeven de scriptie openbaar te willen publiceren (beschikbaar via internet).

Geeft u hiervoor toestemming: Ja/Nee

Let op: Voor de afstudeerrichting Levenswetenschappen/Life Sciences geldt dat de upload ook een Research Report en/of een Essay kan zijn. Houdt u hier rekening mee bij de evt. accordering?

Datum:

S.v.p. replyen of beantwoorden aan [scriptierepositoryfwn@rug.nl](mailto:scriptierepositoryfwn@rug.nl)

Deze e-mail zal in PDF bij de betreffende scriptie worden geplaatst (niet leesbaar/vindbaar).

De scriptie is hier in te zien:

[http://scripties.fwn.eldoc.ub.rug.nl/UDA/upload/160715\\_5445\\_1998859353/Bachelor\\_project\\_K.Blaauw.pdf](http://scripties.fwn.eldoc.ub.rug.nl/UDA/upload/160715_5445_1998859353/Bachelor_project_K.Blaauw.pdf)

UDA: Scripties Faculteit Wiskunde en Natuurwetenschappen

Uw document is ge-upload:

Naam docent: George Palasantzas

E-mailadres docent: [g.palasantzas@rug.nl](mailto:g.palasantzas@rug.nl)

Publiceren: waiting for reply

Filenaam: Bachelor\_project\_K.Blaauw.pdf

Opleiding: PHYS

Bachelor/Master: Bachelor

Titel: Roughness induced superhydrophobicity and capillary control with silver nanoparticles

Auteur(s): Blaauw K.

Aantal pagina's: 31

Taal: en

Publicatiejaar: 2016

Plaats van uitgifte: Groningen

Uitgever: University of Groningen. Faculty of Mathematics & Natural Sciences

Rechten: University of Groningen. Faculty of Mathematics & Natural Sciences

Samenvatting: This thesis demonstrates the effect of induced surface roughness on wetting properties of both silicon and Teflon surfaces. The surface roughness was tuned with the aid of silver nanoparticles. Distinct mono-disperse nanoparticles (13 nm in diameter) were synthesized, exploiting the inert gas aggregation technique, enabling surface roughness control on a single nanometer lengthscale. Static contact angles were found to approach and most likely enter the superhydrophobic range  $> \sim 150^\circ$  for high nanoparticle coverages ( $> 80\%$ ). Strong trapping phenomena caused by adhesion forces and demonstrated by advancing and receding contact angle measurements, indicate a wetting state, characterized by the rose petal effect. This suggests that the drop is most likely in an intermediate Wenzel-Cassie-Baxter state, as proposed in previous research. Furthermore adhesion forces were measured employing atomic force microscopy. Based on the fact that the measurements were performed

in ambient conditions, the adhesion forces can predominantly be attributed to capillary action. A micron-sized sphere was glued to the end of an AFM cantilever to study the capillary menisci acting between silver nanoparticles and a gold coated colloidal probe. The measurements were performed as a function of coverage (0–83%) corresponding to  $\sim 4$  to 37 nm rms roughness. It was found that the capillary force decreases rapidly to a minimal value of  $\sim 6 \cdot 10^{-3}$  N/m in the rms range from 1 to 10 nm, corresponding to the range of roughness for fabricated nanoelectromechanical systems.

Trefwoorden: Superhydrophobicity

Nanoparticles

Roughness tuning

Capillarity

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