

University of Groningen

Innovative coatings for anti-bacterial surfaces

Swartjes, Jan

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version

Publisher's PDF, also known as Version of record

Publication date:
2015

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

Citation for published version (APA):

Swartjes, J. (2015). Innovative coatings for anti-bacterial surfaces [S.I.]: [S.n.]

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

Take-down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Downloaded from the University of Groningen/UMCG research database (Pure): <http://www.rug.nl/research/portal>. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Innovative coatings for anti-bacterial surfaces

Johannes Julius Thomas Marinus Swartjes

The printing of this thesis was financially supported by Ducom Instruments.



Innovative coatings for anti-bacterial surfaces

By Johannes Julius Thomas Marinus Swartjes



University Medical Center Groningen, University of Groningen
Groningen, The Netherlands

Copyright © 2014 by Johannes Julius Thomas Marinus Swartjes

Printed by Off-page Amsterdam, The Netherlands

ISBN (printed version): 978-90-367-7562-5

ISBN (electronic version): 978-90-367-7561-8



/ rijksuniversiteit
groningen

Innovative coatings for anti-bacterial surfaces

Proefschrift

ter verkrijging van de graad van doctor aan de
Rijksuniversiteit Groningen
op gezag van de
rector magnificus prof. dr. E. Sterken
en volgens besluit van het College voor Promoties.

De openbare verdediging zal plaatsvinden op
maandag 26 januari 2015 om 16:15 uur

door
Johannes Julius Thomas Marinus Swartjes
geboren op 8 oktober 1986
te Hoogezand-Sappemeer

Promotores

Prof. dr. ir. H.J. Busscher

Prof. dr. H.C. van der Mei

Copromotor

Dr. P.K. Sharma

Beoordelingscommissie

Prof. dr. A. Herrmann

Prof. dr. P. Buma

Prof. dr. L. W. van Rhijn

To my dear parents

Paranimfen

Deepak H. Veeregowda
Edward T.J. Rochford

CONTENTS

Chapter 1	General introduction: current developments in antimicrobial surface coatings	9
	Aim of Thesis	31
Chapter 2	Length-scale mediated differential adhesion of mammalian cells and microbes	41
Chapter 3	A functional DNase I coating to prevent adhesion of bacteria and the formation of biofilm	59
Chapter 4	A PLGA-coating releasing inulin protected DNase I to prevent adhesion of bacteria and the formation of biofilm	75
Chapter 5	Normally oriented adhesion versus friction forces in bacterial adhesion to polymer-brush functionalized surfaces under fluid flow	93
Chapter 6	Antigen I/II mediated binding of <i>S. mutans</i> to salivary films provides an anchoring mechanism to withstand shear	109
Chapter 7	General discussion	121
	Summary	127
	Samenvatting	133

