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Diploma (MS) in Polymer Chemistry

University of Technology, Dresden, Germany

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List of Publications

Carmen Scholz, Ph.D.

Jorsch, C., Ulkoski, D., Scholz, C., Guenther, M., Gerlach, G. "Implantable biomedical sensor array with biocompatible hermetic encapsulation" *J Sensors and Sensor Arrays, in preparation*

Bothun, G.D., Boltz, L., Kurniawan, Y., Scholz, C. "Cooperative effects of fatty acids and n-butanol on lipid membrane phase behavior" *Colloids and Surfaces B: Biointerfaces*, **2016**, 139, 62-67

Ulkoski, D., Meister, A., Busse, K., Kressler, J., and Scholz, C. "Synthesis and structure formation of block copolymers of poly(ethylene glycol) with homopolymers and random copolymers of *L*-glutamic acid γ -benzyl ester and *L*-leucine in water", *J Colloid Polym Sci* , **2015**, 293, 2147-2155

Scholz, C. "Poly(amino acid) block Copolymers for Drug Delivery and Other Biomedical Applications" *Material Matters*, **2014**, 9(3), 73-76

Ulkoski, D., Scholz, C. "Bioadhesives – chemistry and mode of operation"
In: *Encyclopedia of Polymeric Nanomaterials* (ed.: S. Kobayashi, K.Muellen), Springer Verlag Berlin, Heidelberg 2015, pg. 98 - 105

Scholz, C. , Matyjaszewski, K. "Advances in Atom Transfer Radical Polymerization"
Polymer International **2014**, 63(5) 801-802 (Editor of Special Issue)

Venkataramanan, K.P., Kurniawan, Y., Boatman, J.J., Haynes, C.H., Taconi, K.A., Martin, L., Bothun, G.D., Scholz, C. "Homeoviscous Response of *Clostridium pasteurianum* 1 to Butanol Toxicity During Glycerol Fermentation "
J. Biotechnol. **2014**, 179 C 8-14

Obeid, R., Armstrong, T., Peng, X., Busse, K., Kressler, J., Scholz, C. "The behavior of poly(amino acids) containing *L*-cysteine and their block copolymers with poly(ethylene glycol) on gold surfaces" *Journal of Polymer Science, Part A, Polymer Science*, **2014**, 52(2), 248-257

Iijima, M., Ulkoski, D., Scholz, C. "Synthesis of Pentablock copolymers possessing both, PEG and two kinds of polyamino acid segments" *Polymer Preprints, Japan* **2013**, 62 (2)

Kurniawan, Y., Venkataramanan, K., Piernavienja, M., Scholz, C., Bothun, G.D. "Role of Ionic Strength on *n*-Butanol Partitioning into Anionic Dipalmitoyl Phosphatidylcholine/Phosphatidylglycerol Vesicles" *Journal of Physical Chemistry B*, **2013**, 117(28), 8484-8489.

Kurniawan, Y., Scholz, C., Bothun, G.D. "*n*-Butanol Partitioning at the Interface between Liquid Expanded and Liquid Condensed Phases in a Heterogeneous Lipid Monolayer" *Langmuir*, **2013**, 29(34), 10817-10823

Venkataramanan, K.P., Scholz, C. "Integrated Production of Butanol from Glycerol" In: "Biorefineries: Integrated Biochemical Processes for Liquid Biofuels (ed. N. Qureshi, D. Hodge, A.A. Vertes) Elsevier, **2014**, pg. 225-233

Ulkoski, D., Scholz, C. "Novel synthesis of ABC terpolymers based on poly(ethylene glycol) and poly(amino acid) copolymers" *Polymer Preprints*, **2012**, 53(1), 623-624

Ulkoski, D., Armstrong, T., Scholz, C. "Investigating the Secondary Structure of Poly(amino acids)" in: Tailored Polymer Architectures for Pharmaceutical and Biomedical Applications (ed. C. Scholz, J. Kressler) ACS Symposium Series 1135, **2013**, pp 69-85

Obeid, R., Armstrong, T., Ulkoski, D., Peng, X., Kressler, J., Scholz, C. "PEGylated poly(amino acid) block copolymers for surface modification and self-assembly: synthesis and characterization" *Polymer Preprints*, **2012**, 53(2), 334-335

Guenther, M., Gerlach, G., Wallmersperger, T., Avula, M.N., Cho, S.H., Xie, X., Devener, B.V., Solzbacher, F., Tathireddy, P., Magda, J.J., Scholz, C., Obeid, R., Armstrong, T. "Smart Hydrogel-Based Biochemical Microsensor Array for Medical Diagnostics" *Adv. Sci. Technol.* **2013**, 85, 47-52

Busse, K., Budde, H., Scholz, C., Kressler, J. "Bacterial poly(β -hydroxybutyrate): Hydrophilized and Colored" in: Degradable Polymers and Materials: Principles and Practice Second Edition (ed.: K. Khemani and C. Scholz), ACS Symposium Series, **2013**, 1114, 157-170

Kurniawan, Y., Venkataramanan, K.P., Scholz, C., Bothun, G.D. "*n*-Butanol partitioning and phase behavior in DPPC/DOPC membranes" *Journal of Physical Chemistry B*, **2012**, 116, 5919-5924

Venkataramanan, K.P., Boatman, J.J. Kurniawan, Y., Taconi, K.A., Bothun, G.D., Scholz, C. "Impact of Impurities in Biodiesel-Derived Crude Glycerol on the fermentation by *Clostridium pasteurianum* ATCC 6013" *Applied Microbiol. Biotechnol.* **2012**, 93(3), 1325-1335

Ulkoski, D., Scholz, C. "Novel synthesis of ABS terpolymers based on poly(ethylene glycol) and poly(amino acid) copolymers" *Polymer Preprints*, **2012**, 53(1), 623-624

Armstrong, T., Scholz, C. "Investigation of the secondary structure of oligomeric poly(amino acid)s" *Polymer Preprints*, **2012**, 53(1), 600-601

Obeid, R., Scholz, C. "Synthesis and self-assembly of well-defined Poly(amino acid) end Capped Poly(ethylene glycol) and Poly(2-methyl-2-oxazoline)" *Biomacromolecules*, **2011**, **12** (10), 3797-3804

Obeid, R., Scholz, C. "Synthesis and self-assembly of well-defined polypeptide end-capped poly(ethylene glycol) and poly(2-methyl-2-oxazoline)" *Polymer Preprint*, **2011**, 52

Venkataramanan, K.P., Boatman, J.J., Kurniawan, Y., Scholz, C., Bothun, G.D., Taconi, K.A. "Butanol Production by *Clostridium pasteurianum* ATCC 6013 using Biodiesel-Derived Crude Glycerol: Microbial Response to Environmental Stress" *ACS Division of Fuel Chemistry pre-print*, **2010** (55)

Scholz, C. "Prospectives to produce positively or negatively charged polyhydroxyalkanoic acids". *Appl. Microbiol. Biotechnol.* **2010**, 88, 829-837

Theogarajan, L., Li, H., Busse, K., Desai, S., Kressler, J., Scholz, C. "Self-assembly of ABA triblock copolymers based on functionalized polydimethylsiloxane and polymethyloxazoline" *Polymer International*, **2010**, 59 (9), 1191-1198

Kilicay, E., Hazer, B., Coban, B., Scholz, C. "Synthesis and Characterization of Poly(ethylene glycol) Grafted Unsaturated Microbial Polyesters" *Hacettepe Journal of Biology and Chemistry* **2010**, 38(1) 9-17

Sparks, J., Scholz, C. "Evaluation of a cationic poly(β -hydroxyalkanoate) as a plasmid DNA delivery system" *Biomacromolec.* **2009**, 10, 1715-1719

Scholz, C. "The Molecular Structure of Degradable Polymers" in: *Degradable Polymers for Skeletal Implants* (ed.: I.J.M. Wuisman and T.H. Smit), Nova Science Publishers, Inc. Hauppauge, NY, **2009**, pp 3 - 20

Vayaboury, W., Scholz, C. "Synthesis of poly(amino acids) and poly(amino acid) block copolymers with controlled molecular weight" *Polymer Preprint* **2008**, 49(2), 486-487

Sparks, J., Scholz, C. "Synthesis and characterization of a cationic poly(β -hydroxyalkanoate)" *Biomacromolec.* **2008**, 9(8), 2091-2096

Gerber, S., Kirchhof, K., Kressler, J., Schmelzer, C.E., Scholz, C., Hertel, T.C., Pietzsch, M. "Cloning, Expression, Purification and Characterization of a Designer Protein with Repetitive Sequences" *Protein Expression and Purification* **2008**, 59, 203-214

Scholz, C. "Perspectives on: Material Aspects of Retinal Prostheses" *Journal of Bioactive and Compatible Polymers* **2007**, 22(5), 539-568

Theogarajan, L., Desai, S., Baldo, M., Scholz, C. "Versatile Synthesis of Self-assembling ABA Triblock Copolymers with Polymethyloxazoline A-blocks and a Polysiloxane B-block Decorated with Supramolecular Receptors" *Polymer Internat.* **2008**, 57, 660-667

Gerber, S., Kirchhof, K., Kressler, J., Schmelzer, C.E.H., Scholz, C., Hertel, T.C., Pietzsch, M. "Preparation and Characterization of an artificial peptide with repetitive sequences" *PMSE Preprints*, **2007**, 97, 31-33

Sparks, J., Scholz, C. "Water-soluble Poly(hydroxyalkanoate)s" *Polymer Preprints*, **2007**, 48(2), 806

Theogarajan, L., Desai, S., Baldo, M., Scholz, C. "Ion Responsive Polymeric Vesicles" *Polymer Preprints*, **2007**, 48(2), 1040

Theogarajan, L., Scholz, C., Desai, S., Jensen, R., Baldo, M., Rizzo, J.F. "Self assembling amphiphilic triblock polymers with side-chain mesogens in the hydrophobic core for neural prosthetic devices" *Polymer Preprints*, **2006**, 47(2) 145-146

Busse, K., Budde, H., Scholz, C. Kressler, J. "Bacterial Poly(β -hydroxybutyrate): Hydrophilized and Colored" in: *Degradable Polymers and Materials: Principles and Practice* (ed.: K. Khemani and C. Scholz), ACS Symposium Series 939, Washington **2006**, 61-75

Scholz, C., Vayaboury, W., Sweitzer, R., Shire, D., Rizzo, J.F. "Surface modification of retinal implants" *Polymer Preprints*, **2006**, 47(2) 159-160

Montezuma S., Loewenstein, J., Scholz, C., Rizzo, J. "Biocompatibility of subretinal materials in Yucatan pigs" *Investigative Ophthalmology and Visual Science*, **2006**, 47(6), 3514-3522

Sweitzer, R., Montezuma, S., Rizzo, J., Scholz, C. "Evaluation of subretinal implants coated with amorphous aluminum oxide and diamond-like carbon" *Journal of Bioactive and Compatible Polymers* , **2006**, 21, 5-22

Townsend, K.J., Busse, K., Kressler, J., Scholz, C. "Contact Angle, WAXS and SAXS Analysis of Poly(β -hydroxybutyrate) and Poly(ethylene glycol) Block Copolymers obtained via *Azotobacter vinelandii* UWD" *Biotechnology Progress*, **2005**, 21, 959-964

Wright, Y.J., Kar, A.K., Kim, Y.W., Scholz, C., George, M.A. "Study of Micropipette Assisted Polyethylene-Glycol Coating on Microcantilevers for Sensing Ethanol Vapor" *Sensors and Actuators B (Chemical)* **2005**, B107, 242-251

Montezuma, S., Loewenstein, J., Scholz, C., Rizzo, J. "Biocompatibility of subretinal materials in Yucatan pigs" *Investigative Ophthalmology and Visual Science* **2004**, (4) abstract 4169

Sweitzer, R., Stewart, P., Gingerich, M., Shire, D., Montezuma, S., Rizzo, J., Scholz, C. "Surface modification of retinal implants" *Polymer Preprints* **2004**, 45(2) 448-449

Sanguanchaipaiwong, V., Gabelish, C.L., Scholz, C. and Foster, L.J.R. "Biosynthesis of Polyhydroxyoctanoate – Polyethylene Glycol Block Copolymer by *Pseudomonas oleovorans*" *Biomacromolecules* **2004**, 5, 643-649

Zanzig, J.; Scholz, C. "Effects of Poly(ethylene glycol) on the production of poly(β -hydroxybutyrate) by *Azotobacter vinelandii* UWD" *J. Polym. Environm.* **2003**, 11(4) 145-154

Zanzig, J.; Marimuthu, B.; Werka, J.; Scholz, C. "Investigation of the Impact of Poly(ethylene glycol)-Modulation of Poly(β -hydroxybutyrate) Syntheses on Cell Interactions of the Resulting Polymers" *J. Bioactive Compatible Polymers* **2003**, 18(5) 339-354

Scholz, C.; Schmidt, J., Zanzig, J. "Natural Synthetic Hybrid Block Copolymers and their Cell Interactions" *Polymer Preprints* **2002**, 43(2) 713

Thiruvenkatam, R., Scholz, C. "Synthesis of Poly(β -hydroxybutyrate) in Simulated Microgravity" *Journal of Polymers and the Environment*, **2002**, 8(4) 155-159

Thiruvenkatam, R., Scholz C. "Production of Bacterial Polyesters in Simulated Microgravity" in: *Polymer Processing in Microgravity* (ed. J. Pojman), ACS Symposium Series 793, **2001**, 203-216

Jenzsch, M., Volk, N., Kressler, J., Scholz, C. "Synthesis of Microbial Poly(hydroxy butyrate) Modified with Oligo(pentaerythritol ethoxylate) by *Alcaligenes eutrophus*" *Biomacromolecules* **2001**, 2, 1055-1060

Thiruvenkatam, R., Scholz, C. "Biopolymer production under simulated microgravity conditions" *Polymer Preprints* **2000**, 41 (1) 1064-1065

Thiruvenkatam, R., Scholz, C. "Investigation of gas balance in microbial fermentation performed in the NASA bioreactor" *Polymer Preprints* **2000**, 41 (1) 1076-1077

Scholz, C., Gross, R.A. "Biopolyesters and Biocatalysis – Introduction" in: *Polymers from Renewable Resources Biopolyesters and Biocatalysis* (ed. C. Scholz, R.A. Gross) ACS Symposium Series 764, **2000**, 1-11

Scholz, C. "Poly(β -hydroxyalkanoates) as Potential Biomedical Materials: An Overview" in: *Polymers from Renewable Resources - Biopolyesters and Biocatalysis* (ed. C. Scholz, R.A. Gross), ACS Symposium series 764, **2000**, 328-334

Scholz, C. Mehta, S.; Nicolosi, R., Bisht, K., Guilmanov, V., Gross, R.A. "Bioactivity of extracellular glycolipids - Investigation of Potential Anti-Cancer Activity of Sophorolipids and Sophorolipid-Derivatives" *Polymer Preprints* **1998**, 39 (2) 168-169

Shi, F., Scholz, C., Deng, F., Gross, R.A. "Hybrid Natural-Synthetic Materials: Microbial Polyester-Polyethylene Glycol Adducts by In Vivo Processing" *Polymer Preprints* **1998**, 39 (2) 102-103

Scholz, C., Iijima, M., Nagasaki, Y., Kataoka, K. "Polymeric Micelles as Drug Delivery Systems: A Reactive Polymeric Micelle Carrying Aldehyde" *Polym. Adv. Technol.* **1998**, 9, 768-776

Nagasaki, Y., Okada, T., Scholz, C., Iijima, M., Kato, M., Kataoka, K. "The Reactive Polymeric Micelle Based on Aldehyde-ended Poly(ethylene glycol)/Poly(lactide) Block Copolymer" *Macromolecules* **1998**, 31 1473-1479

Nagasaki, Y., Iijima, M., Okada, T., Scholz, C., Kato, M., Kataoka, K. "The 'Reactive Polymeric Micelle', a Convenient Tool for targeting Drug Delivery Systems" *Polymer Preprints* **1997**, 38 (2) 576-577

Scholz, C., Iijima, M., Nagasaki, Y., Kataoka, K. "A Novel Reactive Polymeric Micelle - Polymeric Micelle with Aldehyde Groups on its Surface" *Macromolecules* **1995**, 28 7295-7297

Scholz, C., Lenz, R.W., Fuller, R.C. "Growth Behavior of *Bacillus thuringiensis* on Different Carbon Sources and Formation of poly(3-hydroxyalkanoates)" *Polym. Bull.* **1995** 34 577-584

Scholz, C., Lenz, R.W., Fuller, R.C. "Production of Poly- β -hydroxyalkanoates With β -Substituents Containing Terminal Ester Groups by *Pseudomonas oleovorans*" *Macromol. Chem. Phys.* **1994** 195 1405-1421

Scholz, C., Lenz, R.W., Fuller, R.C. "Growth and Polymer Incorporation of *Pseudomonas oleovorans* on Different Esters of Heptanoic Acid" *Macromolecules* **1994** 27 2886-2889

Lenz, R.W., Fuller, R.C. Scholz, C., Touraud, F. "Bacterial Synthesis of poly- β -hydroxyalkanoates with functionalized side chains" in: *Biodegradable Plastics and Polymers* (ed. Y. Doi, K. Fukuda) Elsevier Science B.V. **1994** 109-119

Scholz, C., Wolk, S. Lenz, R.W., Fuller, R.C. "Growth and Polyester Production by *Pseudomonas oleovorans* on Branched Octanoic Acid Substrates" *Macromolecules* **1994** 27 6358-6362

Scholz, C., Flath, H.J. "Untersuchungen zur inneren Struktur von Modalfasern"

Textilveredlung **1993** 28 9-13

(“Investigation of the internal structure of high wet modulus fibers”)

Scholz, C., Flath, H.J. “Charakterisierung zugänglicher Strukturanteile in Cellulosefasern”

Melliand Textilberichte **1993** 74 219-221

(“Characterization of accessible structural regions in cellulosic fibers”)

Scholz, C., Flath, H.J. “Zum Einfluß von Metallspuren auf Färbungen mit Reaktiv-farbstoffen”

Textilpraxis International **1992** 9 826-833

(“The influence of metal traces on dyeing with reactive dyestuffs”)

Scholz, C., Flath, H.J. “Zur Strukturbestimmung von Cellulosefaserstoffen mit Hilfe der Jodsorption”;

Textilveredlung **1991** 26 188-191

(“Determination of the structure of cellulosic fibers using iodine sorption technique”)

Flath, H.J., Scholz, C. “Beiträge zur Charakterisierung des amorphen Anteils in

Cellulosefaserstoffen”; VII. Internationales Arbeitsseminar “Struktur und Reaktivität der Cellulose” 10.5. - 13.5. 1988 Reinhardsbrunn, Tagungsband I, S. 159-172

(“Contributions to the characterization of the amorphous part of cellulosic fibers”)

Books

Scholz, C., Kressler, J. Tailored Polymer Architectures for Pharmaceutical and Biomedical Applications *ACS Symposium Series 1135*, **2013**

Khemani, K., Scholz, C. Degradable Polymers and Materials – Principle and Practice 2nd edition *ACS Symposium Series 1114*, **2013**

Kataoka, K., Scholz, C. (Guest Editors) Special Issue on Polymers in Biomedical Applications *Progress in Polymer Science*, 32, 8-9, **2007**

Khemani, K., Scholz, C. Degradable Polymers and Materials – Principle and Practice *ACS Symposium Series 939*, **2006**

Scholz, C., Gross, R.A. Polymers from Renewable Resources: Biopolyesters and Biocatalysis, *ACS Symposium Series 764*, **2000**

Gross, R.A., Scholz, C. Biopolymers from Polysaccharides and Agropoteins, *ACS Symposium Series 786*, **2001**