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Forskning

I have worked in the field of physical chemical characterisation of proteins since 1987. First as a PhD and research assistant working with protein adsorption to solid surfaces and the influence of other surface active components on this. After this I worked with oral and parenteral delivery of pharmaceutical peptides, in the capacity as head of formulation at Ferring AB. Upon my return to the University I have broaden the scope of delivery problems that I work with I have been involved in research endeavours often together with industry partners dealing with controlled delivery of both biological and traditional drugs. When it comes to protein delivery the focus has been on depo-formulations and recently on protein/surfactant interactions. For the traditional drugs most of the focus has been in using hydrogels both classical ones and hydrophobically modified ones for controlled delivery of lipophilic substances. An important part of this work is to investigate the physicochemical properties of the gels, including rheological properties. I am also involved in projects related to Pickering emulsions and primarily their use in formulations for topical creams. I have had several collaborations with pharmaceutical companies especially through diploma workers but also in research collaborations. The companies include Ferring, AstraZeneca, McNeal, Bioglan, Bonesupport, Biogaia Zelmic technology, Nycomedpharma, Leopharma, and NovoNordisk.

Employment

Avdelningsföreståndare, Professor
Avdelningen för livsmedel och läkemedel
Lunds universitet
Lund, Sverige
2015 sep. 21 → present

Stf prefekt
Institutionen för processteknik och tillämpad biovetenskap
Lunds universitet
Lund, Sverige
2024 jan. 3 → present

Riksdagsledamot
Sveriges Riksdag
Stockhom, Sverige
2002 jan. 1 → 2006 jan. 1

Head Pharmaceutical department
Ferring AB
Copenhagen, Danmark
1997 okt. 1 → 2000 juli 30

Ferring AB, Malmö Group manager Peroral group
Ferring AB

Copenhagen, Danmark
1997 apr. 1 → 1997 dec. 30

Research output

How are we handling protein drugs in hospitals? A human factors and systems engineering approach to compare two hospitals and suggest a best practice

Sabaté-Martínez, C., Paulsson, M., González-Suárez, S., Elofsson, U., Fureby, A. M., Wahlgren, M. & López-Cabezas, C., 2024 jan. 1, I: International Journal for Quality in Health Care. 36, 1, mzae020.

Examination of the Protein Drug Supply Chain in a Swedish University Hospital: Focus on Handling Risks and Mitigation Measures

Martínez, C. S., Amery, L., De Paoli, G., Elofsson, U., Fureby, A. M., Kwok, S., López-Cabezas, C., Rosenberger, M., Schoenau, C., Wahlgren, M. & Paulsson, M., 2023 nov., I: Journal of Pharmaceutical Sciences. 112, 11, s. 2799-2810 12 s.

Realizing the AF4-UV-SAXS on-line coupling on protein and antibodies using high flux synchrotron radiation at the CoSAXS beamline, MAX IV

Bolinsson, H., Söderberg, C., Herranz-Trillo, F., Wahlgren, M. & Nilsson, L., 2023 okt., I: Analytical and Bioanalytical Chemistry. 415, 25, s. 6237-6246 10 s.

Quantification of structures in freeze-dried materials using X-ray microtomography

Bai Palmkron, S., Bergenstahl, B., Häkansson, S., Wahlgren, M., Fureby, A. M. & Larsson, E., 2023 feb. 5, I: Colloids and Surfaces A: Physicochemical and Engineering Aspects. 658, 130726.

Utilising phase diagram to understand barley starch microsphere preparation in an aqueous two-phase system

Gidlöf, Z., Lomstein Pedersen, B., Nilsson, L., Teleman, A., Wahlgren, M. & Millqvist-Fureby, A., 2023 feb. 5, I: Colloids and Surfaces A: Physicochemical and Engineering Aspects. 658, 130652.

Charge and zeta-potential distribution in starch modified with octenyl succinic anhydride (OSA) determined using electrical asymmetrical flow field-flow fractionation (EAF4)

Fuentes, C., Choi, J., Wahlgren, M. & Nilsson, L., 2023 jan., I: Colloids and Surfaces A: Physicochemical and Engineering Aspects. 657, 130570.

Investigating thermally induced aggregation of Somatropin- new insights using orthogonal techniques

Västberg, A., Bolinsson, H., Leeman, M., Nilsson, L., Nylander, T., Sejwal, K., Sintorn, I. M., Lidayová, K., Sjögren, H., Wahlgren, M. & Elofsson, U., 2023, I: International Journal of Pharmaceutics. 637, 122829.

Deep eutectic solvents for the preservation of concentrated proteins: the case of lysozyme in 1 : 2 choline chloride : glycerol

Sanchez-Fernandez, A., Prevost, S. & Wahlgren, M., 2022 maj 6, I: Green Chemistry. 24, 11, s. 4437-4442 6 s.

Aggregation Behavior of Structurally Similar Therapeutic Peptides Investigated by ¹H NMR and All-Atom Molecular Dynamics Simulations

Hjalte, J., Hossain, S., Hugerth, A., Sjögren, H., Wahlgren, M., Larsson, P. & Lundberg, D., 2022 mars 7, I: Molecular Pharmaceutics. 19, 3, s. 904-917 14 s.

Tactile friction of topical creams and emulsions: Friction measurements on excised skin and VitroSkin® using ForceBoard™

Ali, A., Ringstad, L., Skedung, L., Falkman, P., Wahlgren, M. & Engblom, J., 2022 mars 5, I: International Journal of Pharmaceutics. 615, 121502.

Relationship between sensorial and physical characteristics of topical creams: A comparative study on effects of excipients

Ali, A., Skedung, L., Burleigh, S., Lavant, E., Ringstad, L., Anderson, CD., Wahlgren, M. & Engblom, J., 2022 feb. 5, I: International Journal of Pharmaceutics. 613, 12 s., 121370.

Shear-induced nanostructural changes in micelles formed by sugar-based surfactants with varied anomeric configuration
Larsson, J., Williams, A. P., Wahlgren, M., Porcar, L., Ulvenlund, S., Nylander, T., Tabor, R. F. & Sanchez-Fernandez, A., 2022 jan. 15, I: Journal of Colloid and Interface Science. 606, s. 328-336 9 s.

Oil-Based Delivery Control Release System Targeted to the Later Part of the Gastrointestinal Tract—A Mechanistic Study
Zhang, L., Wahlgren, M. & Bergenstähl, B., 2022, I: Pharmaceutics. 14, 5, 896.

Temperature and Heat Transfer Control During Freeze Drying. Effect of Vial Holders and Influence of Pressure
Palmkron, S. B., Gustavsson, L., Wahlgren, M., Bergenstål, B. & Fureby, A. M., 2022, I: Pharmaceutical Research. 39, 10 , s. 2597-2606

Topological Dynamics of Micelles Formed by Geometrically Varied Surfactants
Sanchez-Fernandez, A., Larsson, J., Leung, A. E., Holmqvist, P., Czakkel, O., Nylander, T., Ulvenlund, S. & Wahlgren, M., 2022, I: Langmuir. 38, 33, s. 10075-10080 6 s.

Mucoadhesion: mucin-polymer molecular interactions

Pham, Q. D., Nöjd, S., Edman, M., Lindell, K., Topgaard, D. & Wahlgren, M., 2021 dec. 15, I: International Journal of Pharmaceutics. 610, 9 s., 121245.

The impact of glycerol on an affibody conformation and its correlation to chemical degradation

Ramm, I., Sanchez-Fernandez, A., Choi, J., Lang, C., Fransson, J., Schagerlöf, H., Wahlgren, M. & Nilsson, L., 2021 nov., I: Pharmaceutics. 13, 11, 14 s., 1853.

Tail unsaturation tailors the thermodynamics and rheology of a self-assembled sugar-based surfactant

Larsson, J., Leung, A. E., Lang, C., Wu, B., Wahlgren, M., Nylander, T., Ulvenlund, S. & Sanchez-Fernandez, A., 2021 mars, I: Journal of Colloid and Interface Science. 585, s. 178-183 6 s.

Molecular structure of maltoside surfactants controls micelle formation and rheological behavior

Larsson, J., Sanchez-Fernandez, A., Leung, A. E., Schweins, R., Wu, B., Nylander, T., Ulvenlund, S. & Wahlgren, M., 2021 jan. 1, I: Journal of Colloid and Interface Science. 581, s. 895-904 10 s.

Capturing progression of formal knowledge and employability skills by monitoring case discussions in class

Ramberg, U., Edgren, G. & Wahlgren, M., 2021, I: Teaching in Higher Education. 26, 2, s. 246-264

Characterization of binding between model protein GA-Z and human serum albumin using asymmetrical flow field-flow fractionation and small angle X-ray scattering

Choi, J., Wahlgren, M., Ek, V., Elofsson, U., Fransson, J., Nilsson, L., Terry, A. & Söderberg, C. A. G., 2020 nov., I: PLoS ONE. 15, 11 November, 19 s., e0242605.

An integrative toolbox to unlock the structure and dynamics of protein-surfactant complexes

Sanchez-Fernandez, A., Diehl, C., Houston, J. E., Leung, A. E., Tellam, J. P., Rogers, S. E., Prevost, S., Ulvenlund, S., Sjögren, H. & Wahlgren, M., 2020, I: Nanoscale Advances. 2, 9, s. 4011-4023 13 s.

Separation and zeta-potential determination of proteins and their oligomers using electrical asymmetrical flow field-flow fractionation (EAF4)

Choi, J., Fuentes, C., Fransson, J., Wahlgren, M. & Nilsson, L., 2020, I: Journal of Chromatography A. 1633, 461625.

Effects of starch granules differing in size and morphology from different botanical sources and their mixtures on the characteristics of Pickering emulsions

Saari, H., Rayner, M. & Wahlgren, M., 2019 apr. 1, I: Food Hydrocolloids. 89, s. 844-855 12 s.

In vitro methods to study colon release: State of the art and an outlook on new strategies for better in-vitro biorelevant release media

Wahlgren, M., Axenstrand, M., Håkansson, Å., Marefati, A. & Pedersen, B. L., 2019 feb. 22, I: *Pharmaceutics*. 11, 2, 95.

A comparison of emulsion stability for different OSA-modified waxy maize emulsifiers: Granules, dissolved starch, and non-solvent precipitates

Saari, H., Wahlgren, M., Rayner, M., Sjöö, M. & Matos, M., 2019 feb. 1, I: *PLoS ONE*. 14, 2, e0210690.

Dehydration affects drug transport over nasal mucosa

Ali, A., Wahlgren, M., Rembratt-Svensson, B., Daftani, A., Falkman, P., Wollmer, P. & Engblom, J., 2019 jan. 1, I: *Drug delivery*. 26, 1, s. 831-840 10 s.

Characterization of non-solvent precipitated starch using asymmetrical flow field-flow fractionation coupled with multiple detectors

Fuentes, C., Saari, H., Choi, J., Lee, S., Sjöö, M., Wahlgren, M. & Nilsson, L., 2019, I: *Carbohydrate Polymers*. 206, s. 21-28 8 s.

The effect of the anomeric configuration on the micellization of hexadecylmaltoside surfactants

Larsson, J., Sanchez-Fernandez, A., Mahmoudi, N., Barnsley, L., Wahlgren, M., Nylander, T. & Ulvenlund, S., 2019, I: *Langmuir*. 35, 43, s. 13904-13914

Pickering emulsions based on CaCl_2 -gelatinized oat starch

Saari, H., Johansson, D. B., Knopp, N., Sjöö, M., Rayner, M. & Wahlgren, M., 2018, I: *Food Hydrocolloids*. 82, s. 288-295 8 s.

Sifting segregation of ideal blends in a two-hopper tester: Segregation profiles and segregation magnitudes

Marucci, M., Al-Saigh, B., Boissier, C., Wahlgren, M. & Wikström, H., 2018, I: *Powder Technology*. 331, s. 60-67 8 s.

Will a water gradient in oral mucosa affect transbuccal drug absorption?

Ali, A., Wahlgren, M., Pedersen, L. & Engblom, J., 2018, I: *Journal of Drug Delivery Science and Technology*. 48, s. 338-345 8 s.

Production of starch nanoparticles by dissolution and non-solvent precipitation for use in food-grade Pickering emulsions

Saari, H., Fuentes, C., Sjöö, M., Rayner, M. & Wahlgren, M., 2017 feb. 10, I: *Carbohydrate Polymers*. 157, s. 558-566 9 s.

Comparative Emulsifying Properties of Octenyl Succinic Anhydride (OSA)-Modified Starch: Granular Form vs Dissolved State

Matos González, M., Marefati, A., Gutiérrez, G., Wahlgren, M. & Rayner, M., 2016 aug. 1, I: *PLoS ONE*. 11, 8, s. e0160140 0160140.

Preparation and Characterization of Starch Particles for Use in Pickering Emulsions

Saari, H., Heravifar, K., Rayner, M., Wahlgren, M. & Sjöö, M., 2016, I: *Cereal Chemistry*. 93, 2, s. 116-124

Formulation of emulsions

Wahlgren, M., Bergenståhl, B., Nilsson, L. & Rayner, M., 2015 jan. 1, *Engineering Aspects of Food Emulsification and Homogenization*. Rayner, M. & Dejmek, P. (red.). CRC Press, s. 51-100 50 s.

Particle-stabilized emulsions

Sjöö, M., Rayner, M. & Wahlgren, M., 2015 Jan. 1, *Engineering Aspects of Food Emulsification and Homogenization*. Rayner, M. & Dejmek, P. (red.). CRC Press, s. 101-122 22 s.

Amperometric In Vitro Monitoring of Penetration through Skin Membrane

Gari, H., Rembiesa, J., Masilionis, I., Vreva, N., Svensson, B., Sund, T., Hansson, H., Moren, A. K., Sjöö, M., Wahlgren, M., Engblom, J. & Ruzgas, T., 2015, I: *Electroanalysis*. 27, 1, s. 111-117

Barrier properties of heat treated starch Pickering emulsions.

Sjöö, M., Emek, S. C., Hall, T., Rayner, M. & Wahlgren, M., 2015, I: Journal of Colloid and Interface Science. 450, s. 182-188

Do surface active parenteral formulations cause inflammation?

Söderberg, L., Engblom, J., Lanbeck, P. & Wahlgren, M., 2015, I: International Journal of Pharmaceutics. 484, 1-2, s. 246-251

Release of a Poorly Soluble Drug from Hydrophobically Modified Poly (Acrylic Acid) in Simulated Intestinal Fluids.

Knöös, P., Svensson, A. V., Ulvenlund, S. & Wahlgren, M., 2015, I: PLoS ONE. 10, 10, e0140709.

Biomass-based particles for the formulation of Pickering type emulsions in food and topical applications

Rayner, M., Marku, D., Eriksson, M., Sjöö, M., Dejmek, P. & Wahlgren, M., 2014, I: Colloids and Surfaces A: Physicochemical and Engineering Aspects. 458, s. 48-62 15 s.

Effects of Added Surfactant on Swelling and Molecular Transport in Drug-Loaded Tablets Based on Hydrophobically Modified Poly(acrylic acid)

Knöös, P., Wahlgren, M., Topgaard, D., Ulvenlund, S. & Piculell, L., 2014, I: The Journal of Physical Chemistry Part B. 118, 32, s. 9757-9767

Quantifying the release of lactose from polymer matrix tablets with an amperometric biosensor utilizing cellobiose dehydrogenase.

Knöös, P., Schulz, C., Piculell, L., Ludwig, R., Gorton, L. & Wahlgren, M., 2014, I: International Journal of Pharmaceutics. 468, 1-2, s. 121-132

The use of micro- and nanoparticles in the stabilisation of pickering-type emulsions for topical delivery.

Wahlgren, M., Engblom, J., Sjöö, M. & Rayner, M., 2014, I: Current Pharmaceutical Biotechnology. 14, 15, s. 1222-1234

Monitoring and stimulating development of integrated professional skills in university study programmes

Wahlgren, M. & Ahlberg, A., 2013, I: European Journal of Higher Education. 3, 1, s. 62-73 12 s.

Using NMR Chemical Shift Imaging To Monitor Swelling and Molecular Transport in Drug-Loaded Tablets of Hydrophobically Modified Poly(acrylic acid): Methodology and Effects of Polymer (In)solubility

Knöös, P., Topgaard, D., Wahlgren, M., Ulvenlund, S. & Piculell, L., 2013, I: Langmuir. 29, 45, s. 13898-13908

Using observed student team problem solving to monitor and stimulate development of complex integrated professional skills

Ahlberg, A. & Wahlgren, M., 2012 okt. 22, s. 53-54.

Characterization of starch Pickering emulsions for potential applications in topical formulations.

Marku, D., Wahlgren, M., Rayner, M., Sjöö, M. & Timgren, A., 2012, I: International Journal of Pharmaceutics. 428, 1-2, s. 1-7

Comparison of in vitro methods of measuring mucoadhesion: Ellipsometry, tensile strength and rheological measurements.

Ivarsson, D. & Wahlgren, M., 2012, I: Colloids and Surfaces. B, Biointerfaces. 92, s. 353-359

Assessing progression in engineering study programs

Ahlberg, A. & Wahlgren, M., 2011 jan. 1, s. 608-614. 7 s.

Development of mass transport resistance in poly(lactide-co-glycolide) films and particles - A mechanistic study.

Fredenberg, S., Jönsson, M., Laakso, T., Wahlgren, M., Reslow, M. & Axelsson, A., 2011, I: International Journal of Pharmaceutics. 409, 1-2, s. 194-202

Pore formation and pore closure in Poly(D,L-lactide-co-glycolide) films.

Fredenberg, S., Wahlgren, M., Reslow, M. & Axelsson, A., 2011, I: Journal of Controlled Release. 150, s. 142-149

Reversible Conformational Transitions of a Polymer Brush Containing Boronic Acid and its Interaction with Mucin Glycoprotein.

Ivanov, A. E., Solodukhina, N., Wahlgren, M., Nilsson, L., Vikhrov, A. A., Nikitin, M. P., Orlov, A. V., Nikitin, P. I., Kuzimenkova, M. & Zubov, V. P., 2011, I: Macromolecular Bioscience. 11, s. 275-284

The mechanisms of drug release in poly(lactic-co-glycolic acid)-based drug delivery systems-A review.

Fredenberg, S., Wahlgren, M., Reslow, M. & Axelsson, A., 2011, I: International Journal of Pharmaceutics. 415, 1-2, s. 34-52

Curriculum building and student progression in two LTH engineering study programmes

Wahlgren, M. & Ahlberg, A., 2010, 6:e *Pedagogiska Inspirationskonferensen 2010*. Lund: Lund University, (Pedagogiska inspirationskonferensen LTH; vol. 6).

Changera i starch structure during manufacturing of starch microspheres for use in parenteral drug formulations: Effects of temperature treatment

Elfstrand, L., Eliasson, A-C. & Wahlgren, M., 2009, I: Carbohydrate Polymers. 75, 1, s. 157-165 9 s.

Oral-based controlled release formulations using poly(acrylic acid) microgels.

Wahlgren, M., Christensen, K. L., Jørgensen, E. V., Svensson, A. & Ulvenlund, S., 2009, I: Drug Development and Industrial Pharmacy. 35, s. 922-929 8 s.

The effect of starch material, encapsulated protein and production conditions on the protein release from starch microspheres.

Elfstrand, L., Eliasson, A-C. & Wahlgren, M., 2009, I: Journal of Pharmaceutical Sciences. 98, s. 3802-3815

The effects of lipophilic substances on the shape of erythrocytes demonstrated by a new in vitro-method

Söderberg, L., Haag, L., Höglund, P., Stenberg, P. & Wahlgren, M., 2009, I: European Journal of Pharmaceutical Sciences. 36, 4-5, s. 458-464

Vad är en civilingenjör och hur blir studenter civilingenjörer?

Wahlgren, M., Ahlberg, A. & Roxå, T., 2009, *Proceedings 2:a Utvecklingskonferensen för Sveriges ingenjörsutbildningar*. LTH

Rundabordssamtal: Är det skillnad att utbilda naturvetare och tekniker?

Wahlgren, M., Reimer, J. & Bergenståhl, B., 2008, [Host publication title missing]. Lunds Tekniska Högskola

En genomgång av laborativa moment i de obligatoriska kurserna på kemiteknikprogrammets första tre år

Wahlgren, M., 2007, (Unpublished) högskolepedagogiskt projekt programledning B&K. 30 s.

Recrystallization of waxy maize starch during manufacturing of starch microspheres for drug delivery: Influence of excipients

Elfstrand, L., Eliasson, A-C., Jönsson, M., Larsson, M., Simpraga, A., Thelin, B. & Wahlgren, M., 2007, I: Carbohydrate Polymers. 69, 4, s. 732-741

Recrystallization of waxy maize starch during manufacturing of starch microspheres for drug delivery: Optimization by experimental design

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From starch to starch microspheres: Factors controlling the microspheres quality

Elfstrand, L., Eliasson, A-C., Jönsson, M., Reslow, M. & Wahlgren, M., 2006, I: Stärke. 58, 8, s. 381-390

Molecular characterisation of native and processed waxy maize starch in relation to the recrystallisation behaviour of model systems and starch microspheres

Elfstrand, L., Eliasson, A-C., Jönsson, M., Reslow, M. & Wahlgren, M., 2004, *Starch : From Polysaccharides To Granules, Simple And Mixture Gels*. Nova Science Publishers, Inc., s. 203-214

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Starch-lipid interactions and their relevance in food products

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Formation of amylose-lipid complexes and effects of temperature treatment. Part 1: Monoglycerides.

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Non-invasive monitoring of protein adsorption and removal in a turbulent flow cell

Karlsson, C. A. C., Wahlgren, M. C. & Trägårdh, A. C., 2001 jan. 15, I: Colloids and Surfaces B: Biointerfaces. 20, 1, s. 9-25 17 s.

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Detergent Induced Removal of β -Lactoglobulin from Stainless Steel Surfaces at Influenced by Surface Pretreatment

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Some surface-related aspects of the cleaning of new and reused stainless-steel surfaces fouled by protein

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The Interaction between Protein and Surfactants at Solid Interface

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THE REMOVAL OF β -LACTOGLOBULIN FROM STAINLESS STEEL SURFACES AT HIGH AND LOW TEMPERATURE AS INFLUENCED BY THE TYPE AND CONCENTRATION OF CLEANING AGENT

Karlsson, C., Wahlgren, M. & Trägårdh, C., 1998, I: Journal of Food Process Engineering. 21, 6, s. 485-501 17 s.

Ellipsometry and radio-labelling studies on the adsorption of human serum albumin (HSA) and anti-HSA to hydrophobic silicon

Tengvall, P., Askendal, A., Wahlgren, M. & Lundström, I., 1997, I: *Colloids and Surfaces B: Biointerfaces*. 10, s. 61-66 6 s.

Removal of T4 Lysozyme from Silicon Oxide Surfaces by Sodium Dodecyl Sulphate (SDS): A Comparison between Wild Type Protein and a Mutant with Lower Thermal Stability.

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Simple Models for Adsorption Kinetics and Their Correlation to the Adsorption of β -Lactoglobulin A and B

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The interactions in solution between nonionic surfactants and globular proteins: Effects on cloud point

Wahlgren, M., Kedström, J. & Arnebrant, T., 1997, I: *Journal of Dispersion Science and Technology*. 18, 4, s. 449-458 10 s.

The use of mutant proteins in protein adsorption studies

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Adsorption from lipase-surfactant solutions onto methylated silica surfaces

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Adsorption of protein fractions from wheat onto methylated silica surfaces

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Removal of Lysozyme from Methylated Silica Surfaces by a Nonionic Surfactant Pentaethyleneglycol Mono n-Dodecyl Ether (C12E5)

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Time and temperature aspects of β -lactoglobulin removal from methylated silica surfaces by sodium dodecyl sulphate

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β -Lactoglobulin fouling and its removal upon rinsing and by SDS as influenced by surface characteristics, temperature and adsorption time

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Comparative Adsorption Studies with Synthetic, Structural Stability and Charge Mutants of Bacteriophage T4 Lysozyme.

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Marie Wahlgren (deltagare)

2016 okt. 10

Powder Technology in Pharma, Food and Chemistry

Marie Wahlgren (medverkande)

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Awards

RealHOPE: Real World Handling of Protein Drugs - Exploration, Evaluation and Education

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