NEWSLETTER

Editor: Martin G. Peter, University of **Potsdam**, Germany
E-mail Martin.Peter@uni-potsdam.de

http://euchis.org

February 2018
No. 42

Editorial

First of all, we wish all members a happy, healthy, and prosperous New Year 2018.

Sadly, we have to announce that our Honorary President, Olav Å. Smidsrød, passed away on January 29, 2017, at the age of 80. We became aware of his death when the obituary, written by Bjørn E. Christensen, turned up in the search for members publications. The obituary is reprinted in this issue with the consent of Bjørn and purchase of copyright from the publisher (page 3).

Olav was an eminent scientist, well known for his fundamental contributions to biopolymers, in particular alginates and chitosan. In 2008, he was awarded the "Gunnerus Medal" and was a fellow of the "Norwegian Academy of Science and Letters" and the "Norwegian Academy of Technological Sciences". He was Vice-President of EUCHIS 1999-2004, and he was elected Honorary President in 2004, during the 6th EUCHIS conference in Poznan (see Newsletter No. 18, Dec. 2004). Personally (MGP), I met Olav during many Chitin/Chitosan Conferences, and always admired his gentle character, scientific competence, and his sharp mind, being critical but never hurting in the discussions.

An update of members' publications is presented in this Newsletter (pages 6 – 17).

The 14th International Conference on Chitin and Chitosan (ICCC) will take place this year at the end of August at Kansai University, Senriyama Campus, Osaka, Japan under the Chairmanship of Professor Hiroshi Tamura. It will be a big event, held together with the 12th APCCS and the 32nd Meeting of the Japanese Society for Chitin and Chitosan (page 17). Don't miss it!

Preparations for the 14th EUCHIS Conference have started. It will take place in June 2019 in Cork, Ireland. Details will follow soon.

Bruno M. Moerschbacher, President
Martin G. Peter, Secretary

Carbohydrate Polymers 167 (2017) 366–368

Contents lists available at ScienceDirect

Carbohydrate Polymers

journal homepage: www.elsevier.com/locate/carbpol

Obituary

Olav Åsmund Smidsrød (1936–2017)

Olav Smidsrød contributed to the carbohydrate polymer field through his extensive research on marine polysaccharides, especially alginates and chitosan, but worked also on other biopolymers such as xanthan, carrageenans, mixed linkage glucans, glycoproteins (mucins) and proteins (marine collagen). Trained as a physical chemist he brought important concepts from polymer science into the carbohydrate field, and became internationally recognized as an authority on water-soluble polysaccharides. A significant part of his career was devoted to running a multidisciplinary laboratory (NOBIPOL (Christensen, Indergaard, & Smidsrød, 1990)) being able to cover all aspects of biopolymer engineering: Biosynthesis – Primary Structure – Conformation – Physical Properties – Biological Properties and Industrial Applications, bringing together scientists from many different areas (molecular biology, biophysics, carbohydrate chemistry, medicine etc.). For the industrial applications he engaged vigorously in Academia-Industry collaborations. He was one of the original Editorial Board members of Carbohydrate Polymers and supported the journal extensively both as an authors and a reviewer for many years. Regrettably, health issues prevented him from being the active *professor emeritus* he and his collaborators had anticipated following his retirement in 2006.

Olav was educated at the Norwegian Institute of Technology (NTH) (presently incorporated in NTNU – The Norwegian University of Science and Technology) obtaining the degree 'sivilingeniør' in chemical engineering in 1961. His diploma work brought him for the first time into contact with seaweeds separating particles from dissolved alginate, an area that he would follow throughout his career, and on which in 1974 he defended his doctoral thesis '*Some Physical Properties of Alginates in Solution and in the Gel State*'.

Olav joined the Norwegian Institute of Seaweed Research (located at the NTH campus) as a research scientist in 1961. He quickly introduced physical methods, including the determination of the intrinsic viscosity (Haug & Smidsrød, 1962) and the molecular weight and size of alginates (Smidsrød & Haug, 1968). At the same time he engaged in the problem of analysing and understanding the distribution of the two monomers in alginates (M: β-D-mannuronic acid and G: α-L-guluronic acid), which were thought to be binary copolymers analogous to synthetic copolymers until it was discovered some years later that the G residues were formed by enzymatic epimerization at C6 at the polymer level, i.e. post polymerization. The processive nature of these enzymes was discovered much later, and statistical methods, notably 2nd order Markov statistics, were therefore used (Larsen, Painter, Haug, & Smidsrød, 1969) to explain experimental (NMR) data on monad, diad, and triad frequencies, which are still used to characterize alginates (Grasdalen, Larsen, & Smidsrød, 1979;Draget, Moe, Skjåk-Bræk, & Smidsrød, 2006). The understanding of the block structures in alginates emerged through seminal work on partial acid hydrolysis (Haug, Larsen, & Smidsrød, 1966) and solubility in acid of different sequences, leading to isolation of blocks (oligomers) with widely different compositions (homopolymeric M-blocks and G-blocks, and the polyalternating MG-blocks) (Fig. 1).

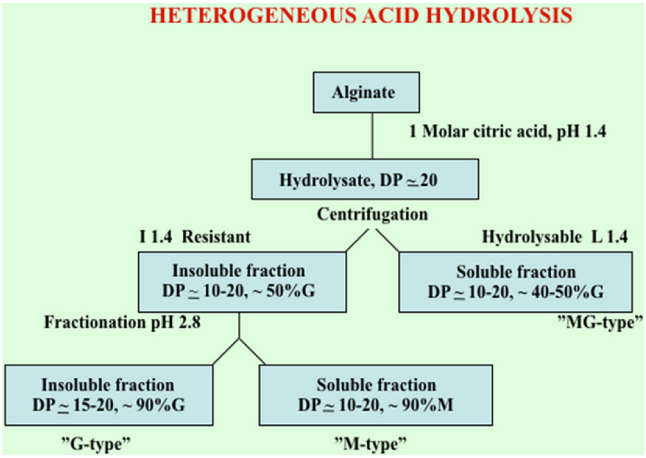


Fig. 1. Detailed studies of the partial acid hydrolysis and fractionation of the alginate oligomers revealed the block-like structure in algal alginates.

Besides studying the gel formation of alginates with calcium salts, the basis for the most important application of alginates, he was particularly interested in the polyelectrolyte properties of charged polysaccharides in aqueous solution. He introduced a semi-empirical parameter often called the 'Smidsrød B-parameter', which was based on the determination of the ionic strength depen-

http://dx.doi.org/10.1016/j.carbpol.2017.03.056

dence of the intrinsic viscosity (experimentally very simple), and which correlated well to the chain stiffness (persistence length) of a range of charged polymers (Smidsrød & Haug, 1971).

Throughout the 1980s he engaged much in studies of polysaccharides with secondary and higher order structure, and how conformational order influenced chemical and physical properties. It had been increasingly recognized that many polysaccharides showed an order-disorder transition upon changes in temperature and ionic strength, often associated with gelation/melting. The transition was typically monitored by chiroptical methods (ORD, CD), differential scanning calorimetry (DSC), NMR, or by rheology/viscometry. It was particularly debated whether the ordered forms of carrageenans and xanthan were single- or double stranded. The major problem was to separate conformational transitions from the recurrent and concomitant aggregation phenomena, which in particular biased light scattering measurements. For carrageenans his physical investigations (viscometry, polarimetry, osmometry) (Smidsrød, Andresen, Grasdalen, Larsen, & Painter, 1980) were incompatible with the double helix model earlier proposed by Rees et al. (Mckinnon, Rees, & William, 1969) The combination of SEC-LALLS (Hjerde, Smidsrød, & Christensen, 1999) and degradation studies (Hjerde, Smidsrød, & Christensen, 1996;Hjerde, Kristiansen, Stokke, Smidsrød, & Christensen, 1994) seemed on the other hand to be compatible with a double-stranded model, although this conclusion has later been questioned (Collen et al., 2009).

Xanthan, on the other hand, seems to exist in a double-stranded state below the transition temperature. Smidsrød and co-workers drew their conclusions on the basis of numerous experimental approaches including electron microscopy (Stokke, Elgsæter, & Smidsrød, 1986;Stokke, Elgsæter, Skjåk-Bræk, & Smidsrød, 1987), and partial degradation combined with SEC-LALLS (Christensen, Smidsrød, Elgsaeter, & Stokke, 1993;Christensen, Myhr, & Smidsrød, 1996). Recent and independent support for a detailed double-helix model was provided by AFM (Moffat, Morris, Al-Assaf, & Gunning, 2016). His work on xanthan was initiated through collaboration with the oil industry, which needed, and still need, water-soluble and environmentally acceptable polymers for enhanced oil recovery.

Towards 1990 Professor Smidsrød also turned his attention to chitosans, what he in many respects considered polycationic 'analogues' to alginates. These efforts were, as for alginates, stimulated by Norwegian research and industrial programmes related to marine resources. Research issues mirrored initially the sequence issues (Ottøy, Vårum, & Smidsrød, 1996) originally developed for alginates, but diversified to include, among other, solubility (Vårum, Ottøy, & Smidsrød, 1994), branching (Tømmeraas, 2002), polyanion-polycation interactions (Thu et al., 1996), enzymatic degradation (Nordtveit, Vårum, & Smidsrød, 1994), and gene therapy.

Throughout the 1990s he also engaged in developing alginate-based gel technologies, notably microencapsulation (Smidsrød & Skjåk-Bræk, 1990), for practical, especially biomedical applications. The most prominent project he initiated was the development of calcium alginate beads for immobilizing insulin-producing cells for the treatment of diabetes mellitus (Soon-Shiong, 1993). This project involved quite diverse research tasks such as determining and controlling elasticity, swelling, homogeneity, porosity, transport of insulin and nutrients for the cells, and immunological properties. Prototypes were brought to the clinic for human trials already in 1991. Yet, the complexity of the project has led to numerous follow-up programs, even up to the present day, in many countries.

Olav Smidsrød would through his long career initiate studies on many other biopolymers in addition to those mentioned above. Examples include mucin (Mikkelsen, Stokke, Christensen, & Elgsæter, 1985), gellan (Grasdalen & Smidsrød, 1987), oat mixed linkage β-D-glucans (Vårum, Smidsrød, & Brant, 1992), xylinan (acetan) (Berth, Dautzenberg, Christensen, Rother, & Smidsrød, 1996), and gelatin (Haug, Draget, & Smidsrød, 2004) from cold water fish.

As a professor at NTNU he developed an entirely new course in biopolymer chemistry which still is being taught. He wrote a textbook on the topic in 1979 ('*Biopolymerkjemi*'). The English version ('*Biopolymer Chemistry*') appeared in 2008 (Smidsrød & Moe, 2008).

Olav Smidsrød was a dedicated biopolymer scientist who also had a tremendous ability to inspire others. He generously shared his knowledge and supported enthusiastically his collaborators. He will be missed both as a scientist and as a fellow human.

Editor's note

Like numerous other scientists working on the physical properties of polysaccharides I was strongly influenced by Olav's work. My thesis, 'Rheological Properties of Polysaccharide Gels' (1973) contained extensive work on alginate gels and the discussion used a lot of the information developed by Olav and colleagues on the stiffness of alginate chains and alginate ion interactions. In my work the Smidsrød B parameter was measured and used to compare the stiffness of pectate chains with different conformations.

John Mitchell

References

Berth, G., Dautzenberg, H., Christensen, B. E., Rother, G., & Smidsrød, O. (1996). Physicochemical studies on xylinan (acetan). I. Characterization by gel permeation chromatography on Sepharose Cl-2 B coupled with static light scattering and viscometry. *Biopolymers*, *39*, 709–719.

Christensen, B. E., Indergaard, M., & Smidsrød, O. (1990). Polysaccharide research in trondheim. *Carbohydrate Polymers*, *13*, 239–255.

Christensen, B. E., Smidsrød, O., Elgsaeter, A., & Stokke, B. T. (1993). Depolymerization of double-stranded xanthan by acid-hydrolysis – Characterization of partially degraded double strands and single-stranded oligomers released from the ordered structures. *Macromolecules*, *26*, 6111–6120.

Christensen, B. E., Myhr, M. H., & Smidsrød, O. (1996). Degradation of double-stranded xanthan by hydrogen peroxide in the presence of ferrous ions: Comparison to acid hydrolysis. *Carbohydrate Research*, *280*, 5–99.

Collen, P. N., et al. (2009). Enzymatic degradation of kappa-carrageenan in aqueous solution. *Biomacromolecules*, *10*, 1757–1767. http://dx.doi.org/10.1021/bm9001766

Draget, K. I., Moe, S. T., Skjåk-Bræk, G., & Smidsrød, O. (2006). In A. M. Stephen, G. O. Phillips, & P. A. Williams (Eds.), *Food polysaccharides and their applications* (pp. 289–334). CRC Press.

Grasdalen, H., & Smidsrød, O. (1987). Gelation of gellan gum. *Carbohydrate Polymers*, *7*, 371–393.

Grasdalen, H., Larsen, B., & Smidsrød, O. (1979). A P.M.R. study of the composition and sequence of uronate residues in alginates. *Carbohydrate Research*, *68*, 23–31.

Haug, A., & Smidsrød, O. (1962). Determination of intrinsic viscosity of alginates. *Acta Chemica Scandinavica*, *16*, 1569–1578.

Haug, A., Larsen, B., & Smidsrød, O. (1966). A study of the constitution of alginic acid by partial acid hydrolysis. *Acta Chemica Scandinavica*, *20*, 183–190.

Haug, I. J., Draget, K. I., & Smidsrød, O. (2004). Physical and rheological properties of fish gelatin compared to mammalian gelatin. *Food Hydrocolloid*, *18*, 203–213.

Hjerde, T., Kristiansen, T. S., Stokke, B. T., Smidsrød, O., & Christensen, B. E. (1994). Conformation dependent depolymerisation kinetics of polysaccharides studied by viscosity measurements. *Carbohydrate Polymers*, *24*, 265–275.

Hjerde, T., Smidsrød, O., & Christensen, B. E. (1996). The influence of the conformational state of kappa- and iota-carrageenan on the rate of acid hydrolysis. *Carbohydrate Research*, *288*, 175–187.

Hjerde, T., Smidsrød, O., & Christensen, B. E. (1999). Analysis of the conformational properties of kappa- and iota-carrageenan by size-exclusion chromatography combined with low-angle laser light scattering. *Biopolymers*, *49*, 71–80.

Larsen, B., Painter, T., Haug, A., & Smidsrød, O. (1969). A statistical description of the alginate molecule in terms of a penultimate-unit copolymer. *Acta Chemica Scandinavica*, *23*, 355–370.

Mckinnon, A. A., Rees, D. A., & William, F. (1969). Coil to double helix transition for a polysaccharide. *Journal of the Chemical Society Chemical Communications*, 701–702. http://dx.doi.org/10.1039/c29690000701

Mikkelsen, A., Stokke, B. T., Christensen, B. E., & Elgsæter, A. (1985). Flexibility and length of human bronchial mucin studied using low-shear viscometry, birefringence relaxation analysis, and electron microscopy. *Biopolymers*, *24*, 1683–1704.

Moffat, J., Morris, V. J., Al-Assaf, S., & Gunning, A. P. (2016). Visualisation of xanthan conformation by atomic force microscopy. *Carbohydrate Polymers, 148*, 380–389. http://dx.doi.org/10.1016/j.carbpol.2016.04.078

Nordtveit, R. J., Vårum, K. M., & Smidsrød, O. (1994). Degradation of fully water-soluble, partially *N*-acetylated chitosans with lysozyme. *Carbohydrate Polymers, 23*, 253–260.

Ottøy, M. H., Vårum, K. M., & Smidsrød, O. (1996). Compositional heterogeneity of heterogeneously deacetylated chitosans. *Carbohydrate Polymers, 29*, 17–24.

Smidsrød, O., & Haug, A. (1968). A light scattering study of alginate. *Acta Chemica Scandinavica, 22*, 797–810.

Smidsrød, O., & Haug, A. (1971). Estimation of the relative stiffness of the molecular chain in polyelectrolytes from measurements of viscosity of different ionic strengths. *Biopolymers, 10*, 1213–1227.

Smidsrød, O., & Moe, S. T. (2008). *Biopolymer chemistry*. Tapir Academic Press.

Smidsrød, O., & Skjåk-Bræk, G. (1990). Alginate as immobilization matrix for cells. *Trends in Biotechnology, 8*, 71–78.

Smidsrød, O., Andresen, I., Grasdalen, H., Larsen, B., & Painter, T. J. (1980). Evidence for a salt-promoted freeze-out of linkage conformations in carrageenans as a pre-requisite for gel-formation. *Carbohydrate Research, 80*, C11–C16.

Soon-Shiong, P. (1993). Long-term reversal of diabetes by the injection of immunoprotected islets. *Proceedings of the National Academy of Sciences of the United-States of America, 90*, 5843–5847.

Stokke, B. T., Elgsæter, A., & Smidsrød, O. (1986). Electron microscopic study of single- and double-stranded xanthan. *International Journal of Biological Macromolecules, 8*, 217–225.

Stokke, B. T., Elgsæter, A., Skjåk-Bræk, G., & Smidsrød, O. (1987). The molecular size and shape of xanthan, xylinan, bronchial mucin, alginate, and amylose as revealed by electron microscopy. *Carbohydrate Research, 160*, 13–28.

Tømmeraas, K. (2002). Preparation and characterisation of chitosans with oligosaccharide branches. *Carbohydrate Research, 337*, 2455–2462.

Thu, B., et al. (1996). Alginate polycation microcapsules. I. Interaction between alginate and polyaction. *Biomaterials, 17*, 1031–1040.

Vårum, K. M., Smidsrød, O., & Brant, D. A. (1992). Light scattering reveals micelle-like aggregation in the (1 –> 3),(1 –> 4)-ß-D-glucans from oat aleurone. *Food Hydrocolloid, 5*, 497–511.

Vårum, K. M., Ottøy, M. H., & Smidsrød, O. (1994). Water-solubility of partially *N*-acetylated chitosans as a function of pH: Effect of chemical composition and depolymerisation. *Carbohydrate Polymers, 25*, 65–70.

Bjørn E. Christensen
NOBIPOL, Department of Biotechnology, NTNU, Trondheim, Norway
E-mail address: bjorn.e.christensen@ntnu.no

Available online 19 March 2017

Member's Bibliography

April – December 2017

For corrections and additions, please contact Martin.Peter@uni-potsdam.de

Reviews

1. ***Aranaz***, I., Acosta, N., ***Heras***, A., **Enzymatic D-*p*-hydroxyphenyl glycine synthesis using chitin and chitosan as supports for biocatalyst immobilization.** *Biocatal. Biotransform.*, (2017), Ahead of Print; http://dx.doi.org/10.1080/10242422.2017.1366991

2. Civantos, A., Martinez-Campos, E., Nash, M.E., Gallardo, A., Ramos, V., Aranaz, I., **Polymeric and Non-Polymeric Platforms for Cell Sheet Detachment**. In: Advanced Materials Interfaces (eds A. Tiwari, H. K. Patra and X. Wang), John Wiley & Sons, Hoboken, NJ, USA., 2016; pp. 463-495; http://dx.doi.org/10.1002/9781119242604.ch13.

3. Demir, O., ***Aksu***, B., Ozsoy, Y., **The use and selection of design of experiments (DoE) in the development of drug product formulation.** *Marmara Pharm. J.*, (2017) **21**, 211-222; http://dx.doi.org/10.12991/marupj.277719.

4. Desbrieres, J., ***Guibal***, E., **Chitosan for wastewater treatment.** *Polym. Int.*, (2018) **67**, 7-14; http://dx.doi.org/10.1002/pi.5464.

5. Faccendini, A., Vigani, B., Rossi, S., Sandri, G., Bonferoni, M.C., ***Caramella***, C.M., Ferrari, F., **Nanofiber Scaffolds as Drug Delivery Systems to Bridge Spinal Cord Injury.** *Pharmaceuticals*, (2017) 10, 63 30 pp; http://dx.doi.org/10.3390/ph10030063.

6. ***Fernandes***, S.C.M. **Surface Modification of Biopolymer-Based Nanoforms and Their Biological Applications**, In: Surface Treatments for Biological, Chemical, and Physical Applications (eds M. Gürsoy and M. Karaman), Wiley-VCH, Weinheim, 2017; pp 209-226; http://dx.doi.org/10.1002/9783527698813.ch6.

7. John, A., ***Gorzelanny***, C., Bauer, A.T., Schneider, S.W., Bolenz, C., **Role of the Coagulation System in Genitourinary Cancers: Review.** *Clin Genitourin Cancer*, (2017), in press. http://dx.doi.org/10.1016/j.clgc.2017.07.013.

8. Kritchenkov, A.S., Andranovits, S., ***Skorik***, Y.A., **Chitosan and its derivatives: vectors in gene therapy.** *Russ. Chem. Rev.*, (2017) **86**, 231-239; http://dx.doi.org/10.1070/RCR4636.

9. Liberski, A., Yacoub, M., Ayad, N., Wojciechowska, D., Zielinska, D., ***Struszczyk***, M.H., Latif, N., **Knitting for heart valve tissue engineering.** *Glob Cardiol Sci Pract*, (2016) **2016**, e201631; http://dx.doi.org/10.21542/gcsp.2016.31

10. Sahariah, P., ***Masson***, M., **Antimicrobial chitosan and chitosan derivatives: A review of the structure-activity relationship.** *Biomacromolecules*, (2017) **18**, 3846-3868; http://dx.doi.org/10.1021/acs.biomac.7b01058.

11. Wendisch, V.F., Brito, L.F., Gil Lopez, M., Hennig, G., Pfeifenschneider, J., ***Sgobba***, E., Veldmann, K.H., **The flexible feedstock concept in Industrial Biotechnology: Metabolic engineering of *Escherichia coli*, *Corynebacterium glutamicum*, *Pseudomonas*, *Bacillus* and yeast strains for access to alternative carbon sources.** *J. Biotechnol.*, (2016) **234**, 139-157; http://dx.doi.org/10.1016/j.jbiotec.2016.07.022.

12. Wendisch, V.F., Jorge, J.M.P., Perez-Garcia, F., ***Sgobba***, E., **Updates on industrial production of amino acids using *Corynebacterium glutamicum*.** *World J. Microbiol. Biotechnol.*, (2016) **32**, 1-10; http://dx.doi.org/10.1007/s11274-016-2060-1.

13. Westereng, B., Arntzen, M.O., ***Vaaje-Kolstadt***, G., ***Eijsink***, V.G.H., Agger, J.W., **Analyzing Activities of Lytic Polysaccharide Monooxygenases by Liquid Chromatography and Mass Spectrometry.** *Methods Mol Biol*, (2017) **1588**, 71-92; http://dx.doi.org/10.1007/978-1-4939-6899-2_7.

Conference Abstracts

14. Widmalm, G., ***Christensen***, B. **Molar mass distribution of O-antigens from *E. coli* strains O44, O125, O142 and O173**, 28th International Carbohydrate Symposium, New Orleans, LA, United States, July 17-21, 2016; ICS-332.

Research Papers

15. Abd El-Magied, M.O., Galhoum, A.A., Atia, A.A., Tolba, A.A., Maize, M.S., Vincent, T., ***Guibal***, E., **Cellulose and chitosan derivatives for enhanced sorption of erbium(III).** *Colloids Surf., A*, (2017) **529**, 580-593; http://dx.doi.org/10.1016/j.colsurfa.2017.05.031.

16. Alba, J., Navarro, R., Saucedo, I., Alba, J., Vincent, T., ***Guibal***, E., **Extractant Immobilization in Alginate Capsules (Matrix- and Mononuclear-Type): Application to Pb(II) Sorption from HCl Solutions.** *Materials,* (2017) **10**, 634. http://dx.doi.org/10.3390/ma10060634.

17. Alba, J., Navarro, R., Saucedo, I., Vincent, T., ***Guibal***, E., **Cadmium Recovery from HCl Solutions Using Cyanex 301 and Cyanex 302 Immobilized in Alginate Capsules (Matrix-Type vs. Mononuclear-Type Mode of Encapsulation).** *Solvent Extr. Ion Exch.*, (2017) **35**, 345-362; http://dx.doi.org/10.1080/07366299.2017.1344489.

18. Albaum, D., Broehan, G., Muthukrishnan, S., ***Merzendorfer***, H., **Functional analysis of TcCTLP-5C2, a chymotrypsin-like serine protease needed for molting in *Tribolium castaneum*.** *Insect Biochem. Mol. Biol.*, (2017) **86**, 20-28; http://dx.doi.org/10.1016/j.ibmb.2017.05.002.

19. Anwar, A., Minhaz, A., Khan, N.A., Kalantari, K., ***Afifi***, A.B.M., Shah, M.R., **Synthesis of gold nanoparticles stabilized by a pyrazinium thioacetate ligand: A new colorimetric nanosensor for detection of heavy metal Pd(II).** *Sens. Actuators, B*, (2018) **257**, 875-881; http://dx.doi.org/10.1016/j.snb.2017.11.040.

20. ***Aranaz***, I., Garcia-Arguelles, S., Del, M.F., Martinez-Campos, E., Moreno-Vicente, C., Civantos, A., Garcia-Arguelles, S., **Macroporous Calcium Phosphate/Chitosan Composites Prepared via Unidirectional Ice Segregation and Subsequent Freeze-Drying.** *Materials*, (2017) **10**, 516; http://dx.doi.org//10.3390/ma10050516.

21. ***Aranaz***, I., Panos, I., ***Heras***, A., Acosta, N., Peniche, C., **Chitosan Spray-Dried Microparticles for Controlled Delivery of Venlafaxine Hydrochloride.** *Molecules*, (2017) **22; h**ttp://dx.doi.org/10.3390/molecules22111980.

22. Aranda-Martinez, A., Naranjo Ortiz, M.A., Abihssira Garcia, I.S., Zavala-Gonzalez, E.A., ***Lopez-Llorca***, L.V., **Ethanol production from chitosan by the nematophagous fungus *Pochonia chlamydosporia* and the entomopathogenic fungi *Metarhizium anisopliae* and *Beauveria bassiana*.** *Microbiol. Res.*, (2017) **204**, 30-39; http://dx.doi.org/10.1016/j.micres.2017.07.009.

23. Arntzen, M.O., Varnai, A., Mackie, R.I., ***Eijsink***, V.G.H., Pope, P.B., **Outer membrane vesicles from *Fibrobacter succinogenes* S85 contain an array of carbohydrate-active enzymes with versatile polysaccharide-degrading capacity.** *Environ. Microbiol.*, (2017) **19**, 2701-2714; http://dx.doi.org/10.1111/1462-2920.13770.

24. Aspras, I., ***Jaworska***, M.M., Gorak, A., **Kinetics of chitin deacetylase activation by the ionic liquid [Bmim][Br].** *J. Biotechnol.*, (2017) **251**, 94-98; http://dx.doi.org/10.1016/j.jbiotec.2017.04.015.

25. Aussel, A., Bordenave, L., Aussel, A., Bordenave, L., Aussel, A., Bordenave, L., Montembault, A., Malaise, S., ***Delair***, T., ***David***, L., Foulc, M.P., Faure, W., Cornet, S., Bordenave, L., Aid, R., Chaouat, M., Letourneur, D., Aid, R., Letourneur, D., **In Vitro Mechanical Property Evaluation of Chitosan-Based Hydrogels Intended for Vascular Graft Development.** *J Cardiovasc Transl Res*, (2017) **10**, 480-488; http://dx.doi.org/10.1007/s12265-017-9763-z.

26. Azeran, N.S.B., Zazali, N.D.B., Tumur, S.S., Ozdogan, A.I., Ekizoglu, M., Sheshala, R., Dua, K., Sahu, P.S., ***Senel***, S., **Moxifloxacin loaded chitosan gel formulations for the treatment of periodontal diseases.** *J. Polym. Mater.*, (2017) **34**, 157-169.

27. Bacik, J.-P., Mekasha, S., Forsberg, Z., Kovalevsky, A.Y., ***Vaaje-Kolstadt***, G., ***Eijsink***, V.G.H., Nix, J.C., Coates, L., Cuneo, M.J., Unkefer, C.J., Chen, J.C.H., **Neutron and atomic resolution X-ray structures of a lytic polysaccharide monooxygenase reveal copper-mediated dioxygen binding and evidence for N-terminal deprotonation.** *Biochemistry*, (2017) **56**, 2529-2532; http://dx.doi.org/10.1021/acs.biochem.7b00019.

28. Barbosa, H.F.G., Ferreira, A.P.G., Attjioui, M., El, G.N.E., ***Moerschbacher***, B.M., Cavalheiro, E.T.G., Dockal, E.R., **Synthesis, Characterization and Biological Activities of Biopolymeric Schiff Bases Prepared with Chitosan and Salicylaldehydes and Their Pd(II) and Pt(II) Complexes.** *Molecules*, (2017) **22;** http://dx.doi.org/10.3390/molecules22111987.

29. ***Bardosova***, M., Fudouzi, H., **Focus on advanced nanoprocessing and applications in sensorics.** *Sci Technol Adv Mater*, (2017) **18**, 664-665; http://dx.doi.org/10.1080/14686996.2017.1368257.

30. Berardi, A., Bisharat, L., Bonacucina, G., ***Casettari***, L., Logrippo, S., Cespi, M., AlKhatib, H.S., Palmieri, G.F., **Formulation, swelling and dissolution kinetics study of zein based matrix tablets.** *Powder Technol.*, (2017) **310**, 241-249; http://dx.doi.org/10.1016/j.powtec.2017.01.038.

31. Bhuvanachandra, B., ***Madhuprakash***, J., ***Podile***, A.R., **Active-site mutations improved the transglycosylation activity of *Stenotrophomonas maltophilia* chitinase A.** *Biochim. Biophys. Acta, Proteins Proteomics*, (2018) **1866**, 407-414; http://dx.doi.org/10.1016/j.bbapap.2017.12.003.

32. Bisharat, L., Berardi, A., ***Perinelli***, D.R., Bonacucina, G., ***Casettari***, L., Cespi, M., Al Khatib, H.S., Palmieri, G.F., **Aggregation of zein in aqueous ethanol dispersions: Effect on cast film properties.** *Int. J. Biol. Macromol.*, (2018) **106**, 360-368; http://dx.doi.org/10.1016/j.ijbiomac.2017.08.024.

33. Bissaro, B., Roehr, A.K., Muller, G., Chylenski, P., Skaugen, M., Forsberg, Z., Horn, S.J., ***Vaaje-Kolstadt***, G., ***Eijsink***, V.G.H., **Oxidative cleavage of polysaccharides by monocopper enzymes depends on H2O2.** *Nat. Chem. Biol.*, (2017) **13**, 1123-1128; http://dx.doi.org/10.1038/nchembio.2470.

34. Bosiger, P., ***Tegl***, G., Richard, I.M.T., Le Gat, L., Huber, L., Stagl, V., Mensah, A., Guebitz, G.M., Rossi, R.M., Fortunato, G., **Enzyme functionalized electrospun chitosan mats for antimicrobial treatment.** *Carbohydr. Polym.*, (2018) **181**, 551-559; http://dx.doi.org/10.1016/j.carbpol.2017.12.002.

35. Caillau, M., Cremillieu, P., Laurenceau, E., Chevolot, Y., Leclercq, J.-L., Alekseev, S., Chevalier, C., ***Delair***, T., **Fifty nanometer lines patterned into silica using water developable chitosan bioresist and electron beam lithography.** *J. Vac. Sci. Technol., B: Nanotechnol. Microelectron.: Mater., Process., Meas., Phenom.*, (2017) **35**, 06GE01/01-06GE01/06; http://dx.doi.org/10.1116/1.4996870.

36. Campana, R., ***Casettari***, L., Ciandrini, E., Illum, L., Baffone, W., **Chitosans inhibit the growth and the adhesion of *Klebsiella pneumoniae* and *Escherichia coli* clinical isolates on urinary catheters.** *Int. J. Antimicrob. Agents*, (2017) **50**, 135-141; http://dx.doi.org/10.1016/j.ijantimicag.2017.03.031.

37. Caro Leon, F.J., Lizardi-Mendoza, J., Arguelles-Monal, W., Carvajal-Millan, E., Lopez Franco, Y.L., ***Goycoolea***, F.M., **Supercritical CO2 dried chitosan nanoparticles: production and characterization.** *RSC Adv.*, (2017) **7**, 30879-30885; http://dx.doi.org/10.1039/C7RA02555F.

38. Cespi, M., Quassinti, L., ***Perinelli***, D.R., Bramucci, M., Iannarelli, R., Papa, F., Ricciutelli, M., Bonacucina, G., Palmieri, G.F., Maggi, F., **Microemulsions enhance the shelf-life and processability of *Smyrnium olusatrum* L. essential oil.** *Flavour Fragrance J.*, (2017) **32**, 159-164; http://dx.doi.org/10.1002/ffj.3367.

39. Chedly, J., Soares, S., Montembault, A., von Boxberg, Y., Veron-Ravaille, M., Mouffle, C., Benassy, M.-N., Taxi, J., ***David***, L., Nothias, F., **Physical chitosan microhydrogels as scaffolds for spinal cord injury restoration and axon regeneration.** *Biomaterials*, (2017) **138**, 91-107; http://dx.doi.org/10.1016/j.biomaterials.2017.05.024.

40. Chylenski, P., Petrovic, D.M., Muller, G., Horn, S.J., ***Eijsink***, V.G.H., Dahlstrom, M., Bengtsson, O., Lersch, M., Siika-Aho, M., **Enzymatic degradation of sulfite-pulped softwoods and the role of LPMOs.** *Biotechnol Biofuels*, (2017) **10**, 177; http://dx.doi.org/10.1186/s13068-017-0862-5.

41. Courtade, G., Aachmann, F.L., Wimmer, R., Dimarogona, M., Sandgren, M., ***Eijsink***, V.G.H., **Backbone and side-chain (1)H, (13)C, and (15)N chemical shift assignments for the apo-form of the lytic polysaccharide monooxygenase NcLPMO9C.** *Biomol NMR Assign*, (2016) **10**, 277-280; http://dx.doi.org/10.1007/s12104-016-9683-x.

42. Courtade, G., Forsberg, Z., ***Vaaje-Kolstadt***, G., ***Eijsink***, V.G.H., Aachmann, F.L., **Chemical shift assignments for the apo-form of the catalytic domain, the linker region, and the carbohydrate-binding domain of the cellulose-active lytic polysaccharide monooxygenase ScLPMO10C.** *Biomol. NMR Assignments*, (2017) **11**, 257-264; http://dx.doi.org/10.1007/s12104-017-9759-2.

43. Crasson, O., Legrand, F., Parente, R., Galleni, M., Vandevenne, M., Courtade, G., Aachmann, F.L., Leonard, R.R., Baurain, D., ***Sørlie***, M., **Human Chitotriosidase: Catalytic Domain or Carbohydrate Binding Module, Who's Leading HCHT's Biological Function.** *Sci Rep*, (2017) **7**, 2768; http://dx.doi.org/10.1038/s41598-017-02382-z.

44. Demey, H., Vincent, T., ***Guibal***, E., **A novel algal-based sorbent for heavy metal removal.** *Chem. Eng. J. (Amsterdam, Neth.)*, (2018) **332**, 582-595; http://dx.doi.org/10.1016/j.cej.2017.09.083.

45. Demir, O., ***Aksu***, B., Ozsoy, Y., Araman, A., **Optimization of dexketoprofen trometamol tablet formulations utilizing different modeling techniques and the quality by design.** *Lat. Am. J. Pharm.*, (2016) **35**, 813-825.

46. Denost, Q., Pontallier, A., Buscail, E., Montembault, A., Bareille, R., Siadous, R., Durand, M., Delmond, S., ***David***, L., Bordenave, L., **Colorectal wall regeneration resulting from the association of chitosan hydrogel and stromal vascular fraction from adipose tissue.** *J. Biomed. Mater. Res., Part A*, (2018) **106**, 460-467; http://dx.doi.org/10.1002/jbm.a.36243.

47. Drozd, N.N., Shagdarova, B.T., Il'ina, A.V., ***Varlamov***, V.P., **Effects of Chitosan Derivative N-[(2-Hydroxy-3-Trimethylammonium)Propyl]Chloride on Anticoagulant Activity of Guinea Pig Plasma.** *Bull. Exp. Biol. Med.*, (2017) **163**, 340-343; http://dx.doi.org/10.1007/s10517-017-3799-6.

48. Elsalamouny, A.R., Desouky, O.A., Mohamed, S.A., Galhoum, A.A., ***Guibal***, E., **Evaluation of adsorption behavior for U(VI) and Nd(III) ions onto fumarated polystyrene microspheres.** *J. Radioanal. Nucl. Chem.*, (2017) **314**, 429-437; http://dx.doi.org/10.1007/s10967-017-5389-5.

49. Elsalamouny, A.R., Desouky, O.A., Mohamed, S.A., Galhoum, A.A., ***Guibal***, E., **Uranium and neodymium biosorption using novel chelating polysaccharide.** *Int. J. Biol. Macromol.*, (2017) **104**, 963-968; http://dx.doi.org/10.1016/j.ijbiomac.2017.06.081.

50. Elwakeel, K.Z., El-Bindary, A.A., Kouta, E.Y., ***Guibal***, E., **Functionalization of polyacrylonitrile/Na-Y-zeolite composite with amidoxime groups for the sorption of Cu(II), Cd(II) and Pb(II) metal ions.** *Chem. Eng. J. (Amsterdam, Neth.)*, (2018) **332**, 727-736; http://dx.doi.org/10.1016/j.cej.2017.09.091.

51. Enache, A.A., ***David***, L., Puaux, J.-P., Banu, I., Bozga, G., **Kinetics of chitosan coagulation from aqueous solutions.** *J. Appl. Polym. Sci.*, (2018), Ahead of Print; http://dx.doi.org/10.1002/app.46062.

52. ***Engwer***, C., Loy, R., Chronakis, I.S., Mendes, A.C., ***Goycoolea***, F.M., **Mesoscopic gelation of chitosan and genipin at below critical concentrations.** *ChemRxiv, Mater. Sci.*, (2017), 1-10; http://dx.doi.org/10.26434/chemrxiv.5487172.

53. Faivre, J., Shrestha, B.R., Xie, G., ***Delair***, T., ***David***, L., Matyjaszewski, K., Banquy, X., **Unraveling the Correlations between Conformation, Lubrication, and Chemical Stability of Bottlebrush Polymers at Interfaces.** *Biomacromolecules*, (2017) **18**, 4002-4010; http://dx.doi.org/10.1021/acs.biomac.7b01063.

54. ***Fenice***, M., **Special issue: chitin, chitosan and related enzymes.** *Molecules*, (2017) **22**, 1066/1061-1066/1063; http://dx.doi.org/10.3390/molecules22071066.

55. Forsberg, Z., Bissaro, B., Gullesen, J., ***Vaaje-Kolstadt***, G., ***Eijsink***, V.G.H., Dalhus, B., **Structural determinants of bacterial lytic polysaccharide monooxygenase functionality.** *J Biol Chem*, (2017), ahead of print; http://dx.doi.org/10.1074/jbc.M117.817130.

56. Franconetti, A., Jimenez-Barbero, J., ***Cabrera-Escribano***, F., **The stabilization of glycosyl cations through cooperative non-covalent interactions. A theoretical perspective.** *Chemphyschem*, (2017), ahead of print; http://dx.doi.org/10.1002/cphc.201700988.

57. Franconetti, A., Nunez-Franco, R., de, G.G., ***Cabrera-Escribano***, F., Iglesias-Siguenza, J., Alvarez, E., **Fingerprinting anion nature in pyrylium complexes: Dual binding mode for anion-π interactions.** *Chemphyschem*, (2017), ahead of print; http://dx.doi.org/10.1002/cphc.201700981.

58. Garcia, E., Saucedo, I., Navarro, R., Dzul, M., del Pilar Gonzalez, M., Elorza, E., ***Guibal***, E., **Encapsulation of Cyanex 302 with Alginate for Palladium Recovery.** *Macromol. Symp.*, (2017) **374**, n/a; http://dx.doi.org/10.1002/masy.201600135.

59. Gaware, V.S., Hakerud, M., Juzeniene, A., Hoegset, A., Berg, K., ***Masson***, M., **Endosome Targeting meso-Tetraphenylchlorin-Chitosan Nanoconjugates for Photochemical Internalization.** *Biomacromolecules*, (2017) **18**, 1108-1126; http://dx.doi.org/10.1021/acs.biomac.6b01670.

60. Gayatri, G., Agurla, S., Anil, K., ***Podile***, A.R., Raghavendra, A.S., Kuchitsu, K., **Stomatal Closure and Rise in ROS/NO of Arabidopsis Guard Cells by Tobacco Microbial Elicitors: Cryptogein and Harpin.** *Front Plant Sci*, (2017) **8**, 1096; http://dx.doi.org/10.3389/fpls.2017.01096.

61. Gyunter, E.A., Melekhin, A.K., Popov, S.V., Durnev, E.A., Martinson, E.A., Litvinets, S.G., Konovalova, M.A., ***Varlamov***, V.P., **Adhesive properties of pectin-chitosan composite gels.** *Chem. Nat. Compd.*, (2017) **53**, 823-829; http://dx.doi.org/10.1007/s10600-017-2133-x.

62. Hamza, M.F., Aly, M.M., Hamza, M.F., Wang, S., Vincent, T., ***Guibal***, E., Abdel-Rahman, A.A.H., Ramadan, S., Raslan, H., **Functionalization of Magnetic Chitosan Particles for the Sorption of U(VI), Cu(II) and Zn(II)-Hydrazide Derivative of Glycine-Grafted Chitosan.** *Materials (Basel)*, (2017) **10;** http://dx.doi.org/10.3390/ma10050539.

63. Haske-Cornelius, O., Pellis, A., ***Tegl***, G., Wurz, S., Saake, B., Ludwig, R., Sebastian, A., Nyanhongo, G.S., Guebitz, G.M., **Enzymatic systems for cellulose acetate degradation.** *Catalysts*, (2017) **7**, 287/281-287/215; http://dx.doi.org/10.3390/catal7100287.

64. Haufe, S., Bohrisch, J., Schwarz, D., ***Bratskaya***, S.Y., Steinbach, C., Schwarz, S., **Flocculation efficiency of reacetylated water soluble chitosan versus commercial chitosan.** *Colloids Surf., A*, (2017) **532**, 222-227; http://dx.doi.org/10.1016/j.colsurfa.2017.05.013.

65. Hembach, L., Cord-Landwehr, S., ***Moerschbacher***, B.M., **Enzymatic production of all fourteen partially acetylated chitosan tetramers using different chitin deacetylases acting in forward or reverse mode.** *Sci Rep*, (2017) **7**, 17692; http://dx.doi.org/10.1038/s41598-017-17950-6.

66. Hossbach, J., Busswinkel, F., Kranz, A., Wattjes, J., Cord-Landwehr, S., ***Moerschbacher***, B.M., **A chitin deacetylase of *Podospora anserina* has two functional chitin binding domains and a unique mode of action.** *Carbohydr. Polym.*, (2018) **183**, 1-10; http://dx.doi.org/10.1016/j.carbpol.2017.11.015.

67. Huber, D., ***Tegl***, G., Mensah, A., Beer, B., Baumann, M., Borth, N., Sygmund, C., Ludwig, R., Guebitz, G.M., **A Dual-Enzyme Hydrogen Peroxide Generation Machinery in Hydrogels Supports Antimicrobial Wound Treatment.** *ACS Appl. Mater. Interfaces*, (2017) **9**, 15307-15316; http://dx.doi.org/10.1021/acsami.7b03296.

68. Il'ina, A.V., Shagdarova, B.T., Lun'kov, A.P., Kulikov, S.N., ***Varlamov***, V.P., **In vitro antifungal activity of metal complexes of a quaternized chitosan derivative with copper ions.** *Microbiology (Moscow, Russ. Fed.)*, (2017) **86**, 590-595; http://dx.doi.org/10.1134/S0026261717050101

69. Kaiser, M., Pohl, L., Ketelhut, S., Kastl, L., Schnekenburger, J., Kemper, B., ***Gorzelanny***, C., Gotte, M., ***Goycoolea***, F.M., **Nanoencapsulated capsaicin changes migration behavior and morphology of madin darby canine kidney cell monolayers.** *PLoS One*, (2017) **12**, e0187497; http://dx.doi.org/10.1371/journal.pone.0187497.

70. Kalantari, K., Moradihamedani, P., Ibrahim, N.A., Bin Abdullah, A.H., ***Afifi***, A.B.M., **Polysulfone mixed-matrix membrane incorporating talc clay particles for gas separation.** *Polym. Bull. (Heidelberg, Ger.)*, (2017), Ahead of Print; http://dx.doi.org/10.1007/s00289-017-2234-5.

71. Kiroshka, V.V., Petrova, V.A., Chernyakov, D.D., Bozhkova, Y.O., Kiroshka, K.V., Baklagina, Y.G., Romanov, D.P., Kremnev, R.V., ***Skorik***, Y.A., **Influence of chitosan-chitin nanofiber composites on cytoskeleton structure and the proliferation of rat bone marrow stromal cells.** *J. Mater. Sci.: Mater. Med.*, (2017) **28**, 1-12; http://dx.doi.org/10.1007/s10856-016-5822-2.

72. Kohlhoff, M., Niehues, A., Wattjes, J., Beneteau, J., Cord-Landwehr, S., El Gueddari, N.E., Bernard, F., Rivera-Rodriguez, G.R., ***Moerschbacher***, B.M., **Chitinosanase: A fungal chitosan hydrolyzing enzyme with a new and unusually specific cleavage pattern.** *Carbohydr. Polym.*, (2017) **174**, 1121-1128; http://dx.doi.org/10.1016/j.carbpol.2017.07.001.

73. Kononova, S.V., Kruchinina, E.V., Petrova, V.A., Baklagina, Y.G., Romashkova, K.A., , Klechkovskaya, V.V., Orekhov, A.S., ***Skorik***, Y.A., **Two-Ply Composite Membranes with Separation Layers from Chitosan and Sulfoethylcellulose on a Microporous Support Based on Poly(diphenylsulfone-N-phenylphthalimide).** *Molecules*, (2017) **22;** http://dx.doi.org/10.3390/molecules22122227.

74. Kononova, S.V., Volod'ko, A.V., Petrova, V.A., Kruchinina, E.V., Baklagina, Y.G., Chusovitin, E.A., ***Skorik***, Y.A., **Pervaporation multilayer membranes based on a polyelectrolyte complex of λ-carrageenan and chitosan.** *Carbohydr. Polym.*, (2018) **181**, 86-92; http://dx.doi.org/10.1016/j.carbpol.2017.10.050.

75. Krucinska, I., Komisarczyk, A., Kowalska, S., ***Struszczyk***, M., Zywicka, B., Szymonowicz, M., Rybak, Z., Zaczynska, E., Czarny, A., Jadczyk, P., Uminska-Wasiluk, B., Kowalczuk, M., Kowalczuk, M., **Biological Properties of Low-Toxicity PLGA and PLGA/PHB Fibrous Nanocomposite Implants for Osseous Tissue Regeneration. Part I: Evaluation of Potential Biotoxicity.** *Molecules*, (2017) **22**; http://dx.doi.org/10.3390/molecules22122092

76. Kuczkowska, K., Myrbraaten, I., Oeverland, L., ***Eijsink***, V.G.H., Follmann, F., Mathiesen, G., Dietrich, J., ***Lactobacillus plantarum*** **producing a** ***Chlamydia trachomatis*** **antigen induces a specific IgA response after mucosal booster immunization.** *PLoS One*, (2017) **12**, e0176401/0176401-e0176401/0176416; http://dx.doi.org/10.1371/journal.pone.0176401.

77. Kumar, V., Fleming, T., Deshpande, D., Herzig, S., Nawroth, P.P., Kumar, V., Fleming, T., Haring, H.-U., Herzig, S., Nawroth, P.P., Terjung, S., Peperkok, R., ***Gorzelanny***, C., Gebhardt, C., Gebhardt, C., Angel, P., Agrawal, R., Mall, M.A., Ranzinger, J., Zeier, M., Madhusudhan, T., Ranjan, S., Isermann, B., Liesz, A., Haring, H.-U., Biswas, S.K., Reynolds, P.R., Hammes, H.-P., Herzig, S., Herzig, S., Nawroth, P.P., **Homeostatic nuclear RAGE-ATM interaction is essential for efficient DNA repair.** *Nucleic Acids Res*, (2017) **45**, 10595-10613; http://dx.doi.org/10.1093/nar/gkx705.

78. ***Kumari***, S., Kumar Annamareddy, S.H., Abanti, S., Kumar Rath, P., **Physicochemical properties and characterization of chitosan synthesized from fish scales, crab and shrimp shells.** *Int. J. Biol. Macromol.*, (2017) **104**, 1697-1705; http://dx.doi.org/10.1016/j.ijbiomac.2017.04.119.

79. Kuusk, S., Kuusk, P., Valjamae, P., Bissaro, B., Forsberg, Z., ***Eijsink***, V.G.H., ***Sørlie***, M., **Kinetics of H2O2-driven degradation of chitin by a bacterial lytic polysaccharide monooxygenase.** *J Biol Chem*, (2017), ahead of print; http://dx.doi.org/10.1074/jbc.M117.817593.

80. Lafontaine, A., Gismondi, E., Dodet, N., Joaquim-Justo, C., Boulange-Lecomte, C., Caupos, F., Lemoine, S., Lagadic, L., Forget-Leray, J., ***Thome***, J.-P., **Bioaccumulation, distribution and elimination of chlordecone in the giant freshwater prawn** ***Macrobrachium rosenbergii*****: Field and laboratory studies.** *Chemosphere*, (2017) **185**, 888-898; http://dx.doi.org/10.1016/j.chemosphere.2017.07.099.

81. ***Lalevee***, G., ***David***, L., Montembault, A., Blanchard, K., Meadows, J., Malaise, S., Crepet, A., Grillo, I., Morfin, I., ***Delair***, T., Sudre, G., **Highly stretchable hydrogels from complex coacervation of natural polyelectrolytes.** *Soft Matter*, (2017) **13**, 6594-6605; http://dx.doi.org/10.1039/C7SM01215B.

82. Lastel, M.-L., Fournier, A., Jurjanz, S., Feidt, C., Rychen, G., ***Thome***, J.-P., Joaquim-Justo, C., Archimede, H., Mahieu, M., **Comparison of chlordecone and NDL-PCB decontamination dynamics in growing male kids after cessation of oral exposure: Is there a potential to decrease the body levels of these pollutants by dietary supplementation of activated carbon or paraffin oil?** *Chemosphere*, (2018) **193**, 100-107; http://dx.doi.org/10.1016/j.chemosphere.2017.10.120.

83. Lemloh, M.-L., Verch, A., ***Weiss***, I.M., **Aqueous ball milling of nacre constituents facilitates directional self-assembly of aragonite nanoparticles of the gastropod *Haliotis glabra*.** *J R Soc Interface*, (2017) **14;** http://dx.doi.org/10.1098/rsif.2017.0450.

84. Lemloh, M.-L., Altintoprak, K., Wege, C., ***Weiss***, I.M., Rothenstein, D., **Biogenic and Synthetic Peptides with Oppositely Charged Amino Acids as Binding Sites for Mineralization.** *Materials (Basel)*, (2017) **10;** http://dx.doi.org/10.3390/ma10020119.

85. Leyva-Diaz, J.C., Poyatos, J.M., Barghini, P., Gorrasi, S., ***Fenice***, M., **Kinetic modeling of *Shewanella baltica* KB30 growth on different substrates through respirometry.** *Microb Cell Fact*, (2017) **16**, 189; http://dx.doi.org/10.1186/s12934-017-0805-7.

86. Liu, Z., Gay, L.M., Tuveng, T.R., Agger, J.W., Westereng, B., Mathiesen, G., Horn, S.J., ***Vaaje-Kolstadt***, G., van Aalten, D.M.F., ***Eijsink***, V.G.H., **Structure and function of a broad-specificity chitin deacetylase from *Aspergillus nidulans* FGSC A4.** *Sci. Rep.*, (2017) **7**, 1-12; http://dx.doi.org/10.1038/s41598-017-02043-1.

87. Lomkova, E.A., Chytil, P., Janouskova, O., Mueller, T., Lucas, H., Filippov, S.K., Trhlikova, O., Aleshunin, P.A., ***Skorik***, Y.A., Ulbrich, K., Etrych, T., **Biodegradable Micellar HPMA-Based Polymer-Drug Conjugates with Betulinic Acid for Passive Tumor Targeting.** *Biomacromolecules*, (2016) **17**, 3493-3507; http://dx.doi.org/10.1021/acs.biomac.6b00947.

88. Lopez-Moya, F., Escudero, N., Zavala-Gonzalez, E.A., ***Lopez-Llorca***, L.V., Esteve-Bruna, D., Blazquez, M.A., Alabadi, D., **Induction of auxin biosynthesis and WOX5 repression mediate changes in root development in *Arabidopsis* exposed to chitosan.** *Sci Rep*, (2017) **7**, 16813; http://dx.doi.org/10.1038/s41598-017-16874-5.

89. Maciel, V.B.V., Franco, T.T., Yoshida, C.M.P., Pereira, S.M.S.S., ***Goycoolea***, F.M., **Electrostatic Self-Assembled Chitosan-Pectin Nano- and Microparticles for Insulin Delivery.** *Molecules*, (2017) **22;** http://dx.doi.org/10.3390/molecules22101707.

90. Mallakuntla, M.K., Vaikuntapu, P.R., Bhuvanachandra, B., Das, S.N., ***Podile***, A.R., **Transglycosylation by a chitinase from *Enterobacter cloacae* subsp. cloacae generates longer chitin oligosaccharides.** *Sci Rep*, (2017) **7**, 5113; http://dx.doi.org/10.1038/s41598-017-05140-3.

91. Marciello, M., Rossi, S., ***Caramella***, C., Remunan-Lopez, C., **Freeze-dried cylinders carrying chitosan nanoparticles for vaginal peptide delivery.** *Carbohydr. Polym.*, (2017) **170**, 43-51; http://dx.doi.org/10.1016/j.carbpol.2017.04.051.

92. Mendes, A.C., Strohmenger, T., ***Goycoolea***, F., Chronakis, I.S., **Electrostatic self-assembly of polysaccharides into nanofibers.** *Colloids Surf., A*, (2017) **531**, 182-188; http://dx.doi.org/10.1016/j.colsurfa.2017.07.044.

93. Mengoni, T., Adrian, M., Pereira, S., Kaiser, M., Santos-Carballal, B., ***Goycoolea***, F.M., **A Chitosan-Based Liposome Formulation Enhances the In Vitro Wound Healing Efficacy of Substance P Neuropeptide.** *Pharmaceutics*, (2017) **9;** http://dx.doi.org/10.3390/pharmaceutics9040056.

94. Minniti, G., Hagen, L.H., Porcellato, D., Pope, P.B., ***Vaaje-Kolstadt***, G., Jorgensen, S.M., **The Skin-Mucus Microbial Community of Farmed Atlantic Salmon (*Salmo salar*).** *Front Microbiol*, (2017) **8**, 2043; http://dx.doi.org/10.3389/fmicb.2017.02043.

95. Mochel, J.P., Tyden, E., Hellmann, K., Vendrig, J.C., ***Senel***, S., Dencker, L., Cristina, R.T., Linden, H., Schmerold, I., **Network on veterinary medicines initiated by the European Federation For Pharmaceutical Sciences.** *J Vet Pharmacol Ther*, (2017), ahead of print; http://dx.doi.org/10.1111/jvp.12472.

96. Navarro, R., Lira, M.A., Saucedo, I., Alatorre, A., Avila, M., ***Guibal***, E., **Amberlite XAD Resins Impregnated with Ionic Liquids for Au(III) Recovery.** *Macromol. Symp.*, (2017) **374**, n/a; http://dx.doi.org/10.1002/masy.201600134.

97. Niehues, A., Wattjes, J., Beneteau, J., Rivera-Rodriguez, G.R., ***Moerschbacher***, B.M., **Chitosan Analysis by Enzymatic/Mass Spectrometric Fingerprinting and in Silico Predictive Modeling.** *Anal. Chem. (Washington, DC, U. S.)*, (2017) **89**, 12602-12608; http://dx.doi.org/10.1021/acs.analchem.7b04002.

98. Ohnuma, T., Taira, T., Umemoto, N., Kitaoku, Y., ***Sørlie***, M., Numata, T., Fukamizo, T., **Crystal structure and thermodynamic dissection of chitin oligosaccharide binding to the LysM module of chitinase-A from *Pteris ryukyuensis*.** *Biochem. Biophys. Res. Commun.*, (2017) **494**, 736-741; http://dx.doi.org/10.1016/j.bbrc.2017.08.143.

99. Olszewska, K., Zielinska, D., ***Struszczyk***, M.H., Wierzbicki, L., Leonowicz, M.K., **Thermal stability of the elastomeric anti-trauma pad.** *Pol. J. Chem. Technol.*, (2017) **19**, 93-100; http://dx.doi.org/10.1515/pjct-2017-0034.

100. Omwenga, E.O., Pereira, S., Hensel, A., Shitandi, A.A., ***Goycoolea***, F.M., **Antiquorum sensing, antibiofilm formation and cytotoxicity activity of commonly used medicinal plants by inhabitants of Borabu sub-county, Nyamira County, Kenya.** *PLoS One*, (2017) **12**, e0185722; http://dx.doi.org/10.1371/journal.pone.0185722.

101. Pedro, R.d.O., ***Goycoolea***, F.M., Pereira, S., Schmitt, C.C., Neumann, M.G., **Synergistic effect of quercetin and pH-responsive DEAE-chitosan carriers as drug delivery system for breast cancer treatment.** *Int. J. Biol. Macromol.*, (2018) **106**, 579-586; http://dx.doi.org/10.1016/j.ijbiomac.2017.08.056.

102. Pedro, R.d.O., Pereira, S., ***Goycoolea***, F.M., Schmitt, C.C., Neumann, M.G., **Self-aggregated nanoparticles of N-dodecyl,N'-glycidyl(chitosan) as pH-responsive drug delivery systems for quercetin.** *J. Appl. Polym. Sci.*, (2018) **135**, n/a; http://dx.doi.org/10.1002/app.45678.

103. ***Perinelli***, D.R., Cespi, M., Bonacucina, G., Rendina, F., Palmieri, G.F., **Heating treatments affect the thermal behaviour of doxorubicin loaded in PEGylated liposomes.** *Int. J. Pharm. (Amsterdam, Neth.)*, (2017) **534**, 81-88; http://dx.doi.org/10.1016/j.ijpharm.2017.09.069.

104. ***Perinelli***, D.R., Cespi, M., Pucciarelli, S., Vincenzetti, S., ***Casettari***, L., Lam, J.K.W., Logrippo, S., Canala, E., Soliman, M.E., Bonacucina, G., Palmieri, G.F., **Water-in-Oil Microemulsions for Protein Delivery: Loading Optimization and Stability.** *Curr. Pharm. Biotechnol.*, (2017) **18**, 410-421; http://dx.doi.org/10.2174/1389201018666170508112947.

105. ***Perinelli***, D.R., Lucarini, S., ***Fagioli***, L., Campana, R., Vllasaliu, D., Duranti, A., ***Casettari***, L., **Lactose oleate as new biocompatible surfactant for pharmaceutical applications.** *Eur. J. Pharm. Biopharm.*, (2018), Ahead of Print; http://dx.doi.org/10.1016/j.ejpb.2017.12.008.

106. ***Perinelli***, D.R., Vllasaliu, D., Bonacucina, G., Come, B., Pucciarelli, S., Ricciutelli, M., Cespi, M., Itri, R., Spinozzi, F., Palmieri, G.F., ***Casettari***, L., **Rhamnolipids as epithelial permeability enhancers for macromolecular therapeutics.** *Eur. J. Pharm. Biopharm.*, (2017) **119**, 419-425; http://dx.doi.org/10.1016/j.ejpb.2017.07.011.

107. Petrova, V.A., Chernyakov, D.D., Moskalenko, Y.E., Gasilova, E.R., Strelina, I.A., Okatova, O.V., Baklagina, Y.G., Vlasova, E.N., ***Skorik***, Y.A., **O,N-(2-sulfoethyl)chitosan: Synthesis and properties of solutions and films.** *Carbohydr. Polym.*, (2017) **157**, 866-874; http://dx.doi.org/10.1016/j.carbpol.2016.10.058.

108. Pettignano, A., Tanchoux, N., Cacciaguerra, T., Vincent, T., Bernardi, L., ***Guibal***, E., Quignard, F., **Sodium and acidic alginate foams with hierarchical porosity: Preparation, characterization and efficiency as a dye adsorbent.** *Carbohydr. Polym.*, (2017) **178**, 78-85; http://dx.doi.org/10.1016/j.carbpol.2017.09.022.

109. Prasanna, L., Moharana, T.R., Sheikh, N., Arravapalli, V.R., Kumaraswamy, T., Nalam, M.R., ***Eijsink***, V.G.H., **Draft Genome Sequence of Entomopathogenic *Brevibacillus laterosporus* Strain Lak 1210, an Alkaliphilic Chitin Degrader.** *Genome Announc*, (2017) **5;** http://dx.doi.org/10.1128/genomeA.01251-17.

110. Prexler, S.M., Singh, R., ***Moerschbacher***, B.M., Dirks-Hofmeister, M.E., **A specific amino acid residue in the catalytic site of dandelion polyphenol oxidases acts as 'selector' for substrate specificity.** *Plant Mol. Biol.*, (2017), Ahead of Print; http://dx.doi.org/10.1007/s11103-017-0686-5.

111. Privar, Y., Malakhova, I., Pestov, A., Fedorets, A., Azarova, Y., Schwarz, S., ***Bratskaya***, S., **Polyethyleneimine cryogels for metal ions sorption.** *Chem. Eng. J. (Amsterdam, Neth.)*, (2018) **334**, 1392-1398; http://dx.doi.org/10.1016/j.cej.2017.11.097.

112. ***Raik***, S.V., Poshina, D.N., Lyalina, T.A., Polyakov, D.S., Vasilyev, V.B., Kritchenkov, A.S., ***Skorik***, Y.A., **N-[4-(N,N,N-trimethylammonium)benzyl]chitosan chloride: Synthesis, interaction with DNA and evaluation of transfection efficiency.** *Carbohydr. Polym.*, (2018) **181**, 693-700;

http://dx.doi.org/10.1016/j.carbpol.2017.11.093.

113. Ramos-Puebla, A., De Santiago, C., Trombotto, S., ***David***, L., Larralde-Corona, C.P., Shirai, K., **Addition of abscisic acid increases the production of chitin deacetylase by *Colletotrichum gloeosporioides* in submerged culture.** *Process Biochem. (Oxford, U. K.)*, (2016) **51**, 959-966; http://dx.doi.org/10.1016/j.procbio.2016.05.003.

114. Regel, E.K., Weikert, T., Niehues, A., ***Moerschbacher***, B.M., Singh, R., **Protein-Engineering of Chitosanase from *Bacillus* sp. MN to Alter its Substrate Specificity.** *Biotechnol Bioeng*, (2017), ahead of print; http://dx.doi.org/10.1002/bit.26533.

115. Romankevich, E.A., Vetrov, A.A., Belyaev, N.A., Sergienko, V.I., Semiletov, I.P., Sukhoverkhov, S.V., ***Bratskaya***, S.Y., Prokuda, N.A., Ulyantsev, A.S., **Alkanes in Quaternary deposits of the Laptev Sea.** *Dokl. Earth Sci.*, (2017) **472**, 36-39; http://dx.doi.org/10.1134/S1028334X17010093.

116. Ryan, C., Schmidt, M., Pemble, M., Alcock, E., Buttimer, F., Clarke, D., ***Bardosova***, M., **Synthesis and characterisation of cross-linked chitosan composites functionalised with silver and gold nanoparticles for antimicrobial applications.** *Sci Technol Adv Mater*, (2017) **18**, 528-540; http://dx.doi.org/10.1080/14686996.2017.1344929.

117. Ryan, C.C., ***Bardosova***, M., Pemble, M.E., **Structural and mechanical properties of a range of chitosan-based hybrid networks loaded with colloidal silica and polystyrene particles.** *J. Mater. Sci.*, (2017) **52**, 8338-8347; http://dx.doi.org/10.1007/s10853-017-1051-4.

118. Sahariah, P., Arnadottir, B., ***Masson***, M., **Synthetic strategy for selective N-modified and O-modified PEGylated chitosan derivatives.** *Eur. Polym. J.*, (2016) **81**, 53-63; http://dx.doi.org/10.1016/j.eurpolymj.2016.05.020.

119. Sahariah, P., Snorradottir, B.S., Hjalmarsdottir, M.A., Sigurjonsson, O.E., ***Masson***, M., **Experimental design for determining quantitative structure activity relationship for antibacterial chitosan derivatives.** *J. Mater. Chem. B*, (2016) **4**, 4762-4770; http://dx.doi.org/10.1039/C6TB00546B.

120. Salaberria, A.M., Rene, H.D., Andres, M.A., Labidi, J., ***Fernandes***, S.C.M., **The Antifungal Activity of Functionalized Chitin Nanocrystals in Poly (Lactid Acid) Films.** *Materials (Basel)*, (2017) **10;** http://dx.doi.org/10.3390/ma10050546.

121. Sandri, G., Aguzzi, C., Rossi, S., Bonferoni, M.C., Bruni, G., Boselli, C., Cornaglia, A.I., Riva, F., Viseras, C., ***Caramella***, C., Ferrari, F., **Halloysite and chitosan oligosaccharide nanocomposite for wound healing.** *Acta Biomater.*, (2017) **57**, 216-224; http://dx.doi.org/10.1016/j.actbio.2017.05.032.

122. Sarshar, S., Brandt, S., Lechtenberg, M., Asadi, K.M.R., Habibi, M., Bouzari, S., Dobrindt, U., Qin, X., ***Goycoolea***, F.M., Hensel, A., **Aqueous extract from *Orthosiphon stamineus* leaves prevents bladder and kidney infection in mice.** *Phytomedicine*, (2017) **28**, 1-9; http://dx.doi.org/10.1016/j.phymed.2017.02.009.

123. ***Sereni***, N., Enache, A., Sudre, G., Montembault, A., Rochas, C., Durand, P., Perrard, M.-H., Bozga, G., Puaux, J.-P., ***Delair***, T., ***David***, L., **Dynamic structuration of physical chitosan hydrogels.** *Langmuir*, (2017) **33**, 12697-12707; http://dx.doi.org/10.1021/acs.langmuir.7b02997.

124. Silvi, S., Barghani, P., Gorrasi, S., Selbmann, L., ***Fenice***, M., **Study of the bacterial biodiversity of sea water samples from Ross Sea, Antarctica.** *J. Environ. Prot. Ecol.*, (2016) **17**, 211-221.

125. Simunek, J., Jr., Sechovcova, H., ***Simunek***, J., Killer, J., Pechar, R., Rada, V., Svec, P., Sedlacek, I., **Characterization of a xylanolytic bacterial strain C10 isolated from the rumen of a red deer (Cervus elaphus) closely related of the recently described species *Actinomyces succiniciruminis*, *A. glycerinitolerans*, and *A. ruminicola*.** *Folia Microbiol (Praha)*, (2017), ahead of print; http://dx.doi.org/10.1007/s12223-017-0577-9.

126. ***Skorik***, Y.A., Golyshev, A.A., Kritchenkov, A.S., Gasilova, E.R., Poshina, D.N., Sivaram, A.J., Jayakumar, R., **Development of drug delivery systems for taxanes using ionic gelation of carboxyacyl derivatives of chitosan.** *Carbohydr. Polym.*, (2017) **162**, 49-55; http://dx.doi.org/10.1016/j.carbpol.2017.01.025.

127. ***Skorik***, Y.A., Kritchenkov, A.S., Moskalenko, Y.E., Golyshev, A.A., ***Raik***, S.V., Whaley, A.K., Vasina, L.V., Sonin, D.L., **Synthesis of N-succinyl- and N-glutaryl-chitosan derivatives and their antioxidant, antiplatelet, and anticoagulant activity.** *Carbohydr. Polym.*, (2017) **166**, 166-172; http://dx.doi.org/10.1016/j.carbpol.2017.02.097.

128. ***Skorik***, Y.A., Petrova, V.A., Okatova, O.V., Strelina, I.A., Gasilova, E.R., **Characterization of Clusters and Unimers in Associating Solutions of Chitosan by Dynamic and Static Light Scattering.** *Macromol. Chem. Phys.*, (2016) **217**, 1636-1644; http://dx.doi.org/10.1002/macp.201600146.

129. Sole, I., ***Vilchez***, S., Miras, J., Montanya, N., Garcia-Celma, M.J., Esquena, J., **DHA and L-carnitine loaded chitosan hydrogels as delivery systems for topical applications.** *Colloids Surf., A*, (2017) **525**, 85-92; http://dx.doi.org/10.1016/j.colsurfa.2017.04.056.

130. Solimando, X., Babin, J., Arnal-Herault, C., Wang, M., Barth, D., Roizard, D., Doillon-Halmenschlager, J.-R., Poncot, M., Royaud, I., Alcouffe, P., ***David***, L., Jonquieres, A., **Highly selective multi-block poly(ether-urea-imide)s for CO2/N2 separation: Structure-morphology-properties relationships.** *Polymer*, (2017) **131**, 56-67; http://dx.doi.org/10.1016/j.polymer.2017.10.007.

131. Sreekumar, S., Lemke, P., ***Moerschbacher***, B.M., Torres-Giner, S., Lagaron, J.M., **Preparation and optimization of submicron chitosan capsules by water-based electrospraying for food and bioactive packaging applications.** *Food Addit. Contam., Part A*, (2017) **34**, 1795-1806; http://dx.doi.org/10.1080/19440049.2017.1347284.

132. ***Struszczyk***, M.H., Puszkarz, A.K., Miklas, M., Wilbik-Halgas, B., Cichecka, M., Urbaniak-Domagala, W., Krucinska, I., **Performance stability of ballistic para-aramid woven fabrics modified by plasma-assisted chemical vapour deposition (PACVD).** *Fibres Text. East. Eur.*, (2016) **24**, 92-97; http://dx.doi.org/10.5604/12303666.1201137.

133. ***Struszczyk***, M.H., Wilbik-Halgas, B., Miklas, M., Cichecka, M., Kucharska, M., Wisniewska-Wrona, M., Brzoza-Malczewska, K., **Estimation of the performance stability of the newly developed topical haemostatic agents based on the chitosan/alginate fibrids.** *Text. Res. J.*, (2017) **87**, 780-789; http://dx.doi.org/10.1177/0040517516639828.

134. Tenci, M., Rossi, S., Aguzzi, C., Carazo, E., Sandri, G., Bonferoni, M.C., Grisoli, P., Viseras, C., ***Caramella***, C.M., Ferrari, F., **Carvacrol/clay hybrids loaded into in situ gelling films.** *Int. J. Pharm. (Amsterdam, Neth.)*, (2017) **531**, 676-688; http://dx.doi.org/10.1016/j.ijpharm.2017.06.024.

135. Thanh, N.H., ***Goycoolea***, F.M., **Chitosan/Cyclodextrin/TPP Nanoparticles Loaded with Quercetin as Novel Bacterial Quorum Sensing Inhibitors.** *Molecules*, (2017) **22;** http://dx.doi.org/10.3390/molecules22111975.

136. Timperio, A.M., Gorrasi, S., Zolla, L., ***Fenice***, M., **Evaluation of MALDI-TOF mass spectrometry and MALDI BioTyper in comparison to 16S rDNA sequencing for the identification of bacteria isolated from Arctic sea water.** *PLoS One*, (2017) **12**, e0181860; http://dx.doi.org/10.1371/journal.pone.0181860.

137. Tuveng, T.R., ***Vaaje-Kolstadt***, G., ***Eijsink***, V.G.H., Rothweiler, U., Udatha, G., Smalas, A., **Structure and function of a CE4 deacetylase isolated from a marine environment.** *PLoS One*, (2017) **12**, e0187544; http://dx.doi.org/10.1371/journal.pone.0187544.

138. Ulyantsev, A.S., Romankevich, E.A., ***Bratskaya***, S.Y., Prokuda, N.A., Sukhoverkhov, S.V., Semiletov, I.P., Sergienko, V.I., **Characteristic of quaternary sedimentation on a shelf of the Laptev Sea according to the molecular composition of n-alkanes.** *Dokl. Earth Sci.*, (2017) **473**, 449-453; http://dx.doi.org/10.1134/S1028334X17040158.

139. Ulyantsev, A.S., Romankevich, E.A., ***Bratskaya***, S.Y., Semiletov, I.P., Avramenko, V.A., **Organic and carbonate carbon in permafrost and thawed deposits from Buor-Khaya Bay (Laptev Sea).** *Dokl. Earth Sci.*, (2017) **473**, 467-471; http://dx.doi.org/10.1134/S1028334X17040237.

140. Vasilieva, T., Sigarev, A., Vasiliev, M., Chuhchin, D., Lopatin, S., ***Varlamov***, V., **Chitin and Cellulose Processing in Low-Temperature Electron Beam Plasma.** *Molecules*, (2017) **22;** http://dx.doi.org/10.3390/molecules22111908.

141. Vincent, T., Dumazert, L., Dufourg, L., Cucherat, C., Sonnier, R., ***Guibal***, E., **New alginate foams: Box-Behnken design of their manufacturing; fire retardant and thermal insulating properties.** *J. Appl. Polym. Sci.*, (2018) **135**, n/a; http://dx.doi.org/10.1002/app.45868.

142. Vincenzetti, S., Cecchi, T., ***Perinelli***, D.R., Pucciarelli, S., Polzonetti, V., Bonacucina, G., Ariani, A., Parrocchia, L., Spera, D.M., Ferretti, E., Vallesi, P., Polidori, P., **Effects of freeze-drying and spray-drying on donkey milk volatile compounds and whey proteins stability.** *LWT--Food Sci. Technol.*, (2018) **88**, 189-195; http://dx.doi.org/10.1016/j.lwt.2017.10.019.

143. Vivekanand, V., Mulat, D.G., ***Eijsink***, V.G.H., Horn, S.J., **Synergistic effects of anaerobic co-digestion of whey, manure and fish ensilage.** *Bioresour. Technol.*, (2018) **249**, 35-41; http://dx.doi.org/10.1016/j.biortech.2017.09.169.

144. Wang, S., Hamza, M.F., Vincent, T., Faur, C., ***Guibal***, E., **Praseodymium sorption on Laminaria digitata algal beads and foams.** *J. Colloid Interface Sci.*, (2017) **504**, 780-789; http://dx.doi.org/10.1016/j.jcis.2017.06.028.

145. Wang, S., Vincent, T., ***Guibal***, E., Faur, C., **Algal Foams Applied in Fixed-Bed Process for Lead(II) Removal Using Recirculation or One-Pass Modes.** *Mar Drugs*, (2017) **15;** http://dx.doi.org/10.3390/md15100315.

146. Wang, S., Vincent, T., Roux, J.-C., Faur, C., ***Guibal***, E., **Innovative conditioning of algal-based sorbents: Macro-porous discs for palladium sorption.** *Chem. Eng. J. (Amsterdam, Neth.)*, (2017) **325**, 521-532; http://dx.doi.org/10.1016/j.cej.2017.05.103.

147. Wattjes, J., Schindler, B., Trombotto, S., ***David***, L., ***Moerschbacher***, B.M., Compagnon, I., **Discrimination of patterns of *N*-acetylation in chitooligosaccharides by gas phase IR spectroscopy integrated to mass spectrometry.** *Pure Appl. Chem.*, (2017) **89**, 1349-1357; http://dx.doi.org/10.1515/pac-2017-0110.

148. Weikert, T., Niehues, A., Cord-Landwehr, S., Hellmann, M.J., ***Moerschbacher***, B.M., **Reassessment of chitosanase substrate specificities and classification.** *Nat Commun*, (2017) **8**, 1698; http://dx.doi.org/10.1038/s41467-017-01667-1.

149. ***Weiss***, I.M., Muth, C., Drumm, R., Kirchner, H.O.K., **Thermal decomposition of the amino acids glycine, cysteine, aspartic acid, asparagine, glutamic acid, glutamine, arginine and histidine.** *bioRxiv, Biochem.*, (2017), 1-23; http://dx.doi.org/10.1101/119123.

150. Wu, D., Ensinas, A., Verrier, B., Cuvillier, A., Champier, G., Paul, S., ***Delair***, T., **Ternary polysaccharide complexes: Colloidal drug delivery systems stabilized in physiological media.** *Carbohydr. Polym.*, (2017) **172**, 265-274; http://dx.doi.org/10.1016/j.carbpol.2017.05.051.

151. Yan, X., Alcouffe, P., Sudre, G., ***David***, L., Bernard, J., Ganachaud, F., **Modular construction of single-component polymer nanocapsules through a one-step surfactant-free microemulsion templated synthesis.** *Chem. Commun. (Cambridge, U. K.)*, (2017) **53**, 1401-1404; http://dx.doi.org/10.1039/C6CC09701D.

152. Yoshiba, K., Okamoto, S., Dobashi, T., Oku, H., ***Christensen***, B.E., Sato, T., **Effects of carboxylation of the side chains on the order-disorder transition in aqueous solution of schizophyllan, a triple helical polysaccharide.** *Carbohydr. Polym.*, (2017) **168**, 79-85; http://dx.doi.org/10.1016/j.carbpol.2017.03.038.

153. Zhang, B., Sudre, G., Quintard, G., Serghei, A., ***David***, L., Bernard, J., Fleury, E., Charlot, A., **Guar gum as biosourced building block to generate highly conductive and elastic ionogels with poly(ionic liquid) and ionic liquid.** *Carbohydr. Polym.*, (2017) **157**, 586-595; http://dx.doi.org/10.1016/j.carbpol.2016.10.050.

154. Zielinska, D., ***Struszczyk***, M.H., Madej-Kielbik, L., Chmal-Fudali, E., Kucharska, M., Wisniewska-Wrona, M., Brzoza-Malczewska, K., **Design of New-Generation Usable Forms of Topical Haemostatic Agents Containing Chitosan.** *Molecules*, (2017) **22;** http://dx.doi.org/10.3390/molecules22122240.

155. ***Zubareva***, A., Shagdarova, B., ***Varlamov***, V., Kashirina, E., Svirshchevskaya, E., **Penetration and toxicity of chitosan and its derivatives.** *Eur. Polym. J.*, (2017) **93**, 743-749; http://dx.doi.org/10.1016/j.eurpolymj.2017.04.021.

Patents

156. Burnet, M., Heinzle, A., Sigl, E., Luschnig, D., Gamerich, C., ***Tegl***, G., Guebitz, G. **Detecting microbial infection in wounds based on enzymic action on chimeric protein constructs and synthetic substrates.** WO2017168249A2, 2017.

157. ***Delair***, T., Trombotto, S., ***David***, L., Chaillon, P., Reviron, S., Altounian, A. **Use of polymers for fixing of dyes on paper.** WO2017115047A1, 2017.

158. Konovalova, M.V., Popov, S.V., Popova, G.Y., Nikitina, I.R., Markov, P.A., ***Varlamov***, V.P., Kurek, D.V. **Method for getting surgical barrier material based on polysaccharides.** RU2627666C1, 2017.

159. Kopias, K., Golczyk, A., Kowalski, K., ***Struszczyk***, M. **Knitted implant for reconstruction of connective tissue defect.** PL221018B1, 2016.

160. Montembault, A., ***David***, L., ***Delair***, T., Tadier, S., Gremillard, L., Faivre, A., Despetis, F. **Product and process for the preparation of an injectable composition based on chitosan and bioglasses, intended for the regeneration of bone tissue.** FR3051371A1, 2017.

161. ***Podile***, A.R., Nadendla, S.S.R. **Biopesticide compositions comprising stable harpinpss-loaded chitosan nanoparticles and methods thereof.** IN201741034005A, 2017.

162. Shagdarova, B.T., Lopatin, S.A., Konovalova, M.V., Ilina, A.V., ***Albulov***, A.I., ***Varlamov***, V.P. **Method for producing low-molecular weight chitosan and chitosan oligomers.** RU2627870C1, 2017.

163. ***Struszczyk***, M.H., Litwa, P., Rosiak, J.M., Ulanski, P., Hodyr, K., Kadlubowski, S., Olejnik, A.K., Wach, R. **Method for modifying of properties of composite ballistic plate.** PL222950B1, 2016.

164. Wietecha, J., Kazimierczak, J., Ciechanska, D., ***Struszczyk***, M., Krzyzanowska, G., Kluska, A., Dobrowolska, A., Majcherek, Z. **Layered surgical mesh and method for manufacturing layered surgical mesh.** PL222082B1, 2016.

Events

- XXIX International Carbohydrate Symposium (ICS 2018), Lisbon, Portugal, July 14-19, 2018; Chair: Amélia Pilar Rauter. URL: http://ics2018.eventos.chemistry.pt/.
- 14th International Chitin and Chitosan Conference (14th ICCC) & 12th Asia-Pacific Chitin and Chitosan Symposium (12th APCCS), Joint with 32nd Japanese Society for Chitin and Chitosan Conference, Kansai University (Senriyama Campus), Suita, OSAKA, JAPAN, August 27-30, 2018; Chair: Hiroshi Tamura. URL: http://www.apccs2018.org. For 2nd circular with details, see page 18.
- 14th International Conference of The European Chitin Society (EUCHIS'19), Cork, Ireland, 2019; Chair: Maria Bardosova. In preparation; details will follow with the next Newsletter.
- XX European Carbohydrate Symposium (Eurocarb 20), Leiden, The Netherlands, 2019. No further information available at this time.

2nd Circular

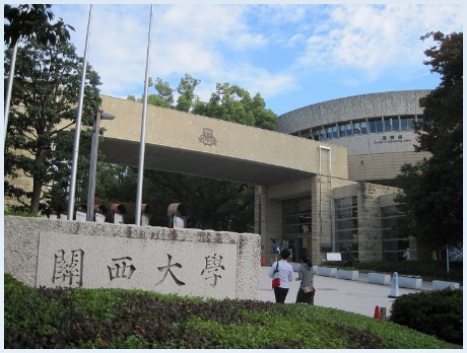
14th International Chitin and Chitosan Conference (14th ICCC) & 12th Asia-Pacific Chitin and Chitosan Symposium (12th APCCS)

(Joint with 32nd Japanese Society for Chitin and Chitosan Conference)

Kansai University (Senriyama Campus)
Suita, OSAKA, JAPAN
August 27-30, 2018

Important Deadlines

Title and abstract submission deadline	April 30, 2018
Notification of acceptance	May 31, 2018
End of Early bird registration	July 31, 2018
Conference	August 27-30, 2018



Kansai University
(Senriyama Campus)

Registration Fees

	Early bird registration (before July 31, 2018)	On site registration (after July 31, 2018)	Excursion & dinner
Member of JSCC 1)	40,000 JPY	45,000 JPY	(included)
Non-member of JSCC 1)	45,000 JPY	50,000 JPY	
Student 2)	20,000 JPY	20,000 JPY	5,000 JPY
Accompanying person 3)	25,000 JPY	25,000 JPY	(included)

1) The registration allows you to participate in sessions with proceedings, welcome party, excursion & dinner, lunches, and coffee breaks.
2) Students are allowed to join in sessions with proceedings, welcome party, lunches, and coffee breaks. In case to attend excursion & dinner, extra 5,000 JPY is necessary.
3) Accompany persons are allowed to join welcome party, excursion & dinner, lunches, and coffee breaks.
4) After 31 July 2018, payment is only on site.

Organizing Committee

Chair
- Hiroshi Tamura

Co-chair
- Toshinari Kawada
- Isao Nagaoka

Organizing Committee
- Makoto Anraku
- Shinsuke Ifuku
- Jyunichi Kadokawa
- Takashi Miyata
- Satoshi Nakamura
- Yuichi Ohya
- Yoshiharu Okamoto
- Toki Taira
- Saori Takahashi
- Mitsuhiro Ueda

Local Committee
- Tetsuya Furuike
- Toshinari Kawada
- Katsushiro Miyamoto
- Takayuki Ohnuma
- Kimihiko Sato
- Hiroshi Tsujibo
- Ryoichi Tsurutani

Secretariat
- Hiroshi Seo
- Tetsuya Furuike

HP: http://www.apccs2018.org

Contact: iccc.apccs2018@gmail.com

14th International Chitin & Chitosan Conference & 12th Asia-Pacific Chitin & Chitosan Symposium
OSAKA, JAPAN. August 27-30, 2018

JSCC
Japanese Society for Chitin and Chitosan