

A. Peer-reviewed scientific articles

- A42 Supriyanto, Usino, D.A., Ylittero, P., Dou, J., **Sipponen, M.H.**, Richards, T. Identifying Primary Reactions and Products of Fast Pyrolysis of Alkali Lignin. *J. Anal. Appl. Pyrolysis*. **2020**, DOI: 10.1016/j.jaap.2020.104917.
- A41 Moreno, A., **Sipponen, M.H.**, Biocatalytic Nanoparticles for the Stabilization of Degassed Single Electron Transfer Living Radical Pickering Emulsion Polymerizations. Preprint, Accepted to publication in *Nat. Commun.* **2020**, DOI: [10.21203/rs.3.rs-48599/v1](https://doi.org/10.21203/rs.3.rs-48599/v1)
- A40 Moreno, A., **Sipponen, M.H.**, Lignin-based smart materials: a roadmap to processing and synthesis for current and future applications. *Mater. Horiz.* **7**, **2020**, 2237. DOI: 10.1039/D0MH00798F
- A39 Österberg, M., **Sipponen, M.H.**, Mattos, B., Rojas, O.J., Spherical lignin particles: A review on their sustainability and applications. *Green Chem.*, **22**, **2020**, 2712-2733. DOI: 10.1039/D0GC00096E.
- A38 **Sipponen, M.H.**, Henn, A, Penttilä, P, Österberg, M. Lignin-fatty acid hybrid nanocapsules for scalable thermal energy storage in phase-change materials. *Chem. Eng. J.*, **393**, **2020**, 124711. DOI: 10.1016/j.cej.2020.124711.
- A37 Budnyak, T.M., Slabon, A., **Sipponen, M.H.**, Lignin-inorganic interfaces: chemistry and applications from adsorbents to catalysts and energy storage materials. *ChemSusChem* **13**, **2020**, 4344-4355. DOI: 10.1002/cssc.202000216.
- A36 Rivière, G.N., Korpi, A., **Sipponen, M.H.**, Zou, T., Kostiainen, M.A., Österberg, M. Agglomeration of viruses by cationic lignin particles for facilitated water purification. *ACS Sustainable Chem. Eng.* **8**, **2020**, 4167-4177.
- A35 Zhang, X. Morits, M. Jonkergouw, C. Ora, A., Valle-Delgado, J.J., Farooq, M. Ajdary, R. Huan, S. Linder, M.B., Rojas, O.J., **Sipponen, M.H.**, Österberg, M. 3D Printed Cell Culture Model Based on Spherical Colloidal Lignin Particles and Cellulose Nanofibril-alginate Hydrogel. *Biomacromolecules* **21**, **2020**, 1875-1885. DOI: acs.biomac.9b01745.
- A34 **Sipponen, M.H.**, Österberg, M. Aqueous ammonia pretreatment of wheat straw: Process optimization and broad spectrum dye adsorption on nitrogen-containing lignin. *Front. Chem.* **7**, **2019**: 545.
- A33 Figueiredo, P., **Sipponen, M.H.**, Lintinen, K., Correia, A., Kiriazis, A., Yli-Kauhaluoma, J., Österberg, M., George, A., Hirvonen, J., Kostiainen, M.A. Santos, H.A. Preparation and Characterization of Dentin Phosphoryn-Derived Peptide-Functionalized Lignin Nanoparticles for Enhanced Cellular Uptake. *Small* **15**, **2019**, 1901427.
- A32 **Sipponen, M.H.**, Lange, H., Crestini, C., Henn, A., Österberg, M. Lignin for Nano- and Microscaled Carrier Systems: Applications, Trends, and Challenges. *ChemSusChem* **12**, **2019**, 2039-2054.
- A31 Zou, T., **Sipponen, M.H.**, Österberg, M. Natural shape-retaining microcapsules with shells made of chitosan-coated colloidal lignin particles. *Front. Chem.* **7**, **2019**: 370.
- A30 Farooq, M., Zou, T., Riviere, G., **Sipponen, M.H.**, Österberg, M. Strong, ductile and waterproof cellulose nanofibril composite films with colloidal lignin particles. *Biomacromolecules* **20**, **2019**, 693-704.
- A29 Farooq, M., **Sipponen, M.H.**, Seppälä, A., Österberg, M., Eco-Friendly flame retardant cellulose nanofibril aerogels by incorporating sodium bicarbonate. *ACS Appl. Mat. Interfaces* **10**, **2018**, 27407-27415.
- A28 Pellis, A., Comerford, J.W., Maneffa, A.J., **Sipponen, M.H.**, Clark, J.H., Farmer, T.J. Elucidating enzymatic polymerisations: chain-length selectivity of *Candida antarctica* lipase B towards various aliphatic diols and dicarboxylic acid diesters. *Eur. Polym. J.* **106**, **2018**, 79-84.
- A27 **Sipponen, M.H.**, Farooq, M., Koivisto, J., Pellis, A., Seitsonen, J., Österberg, M. Spatially confined lignin nanospheres for biocatalytic ester synthesis in aqueous media. *Nat. Commun.* **9**, **2018**, 2300.
- A26 **Sipponen, M.H.**, Lange, H., Ago, M., Crestini, C. Understanding Lignin Aggregation Processes. A Case Study: Budesonide Entrapment and Stimuli Controlled Release from Lignin Nanoparticles. *ACS Sustainable Chem. Eng.* **6**, **2018**, 9342-9351.
- A25 Lintinen, K., Xiao, Y., Ashok, R.P.B., Leskinen, T., Sakarinen, E., **Sipponen, M.H.**, Farooq, M., Oinas, P., Österberg, M., Kostiainen, M.A. Closed Cycle Production of Concentrated and Dry Redispersible Colloidal Lignin Particles with a Three Solvent Polarity Exchange Method. *Green Chem.*, **20**, **2018**, 843-850.
- A24 Mattinen, M., Valle-Delgado, J., Leskinen, T., Anttila, T., Riviere, G., **Sipponen, M.**, Paananen, A., Lintinen, K., Kostiainen, M., Österberg, M. Enzymatically and chemically oxidized lignin nanoparticles for biomaterial applications. *Enzyme Microb. Technol.* **111**, **2018**, 48-56.
- A23 Österberg, M., **Sipponen, M.H.**, Henriksson, G. Editorial: From understanding the biological function of lignin in plants to production of colloidal lignin particles. *Nord. Pulp. Paper Res. J.* **32**, **2017**, 483-484.
- A22 **Sipponen, M.H.**, Rahikainen, J., Leskinen, T., Pihlajaniemi, V., Mattinen, M., Lange, H., Crestini, C., Österberg, M. Structural changes of lignin in biorefinery pretreatments and consequences to enzyme-lignin interactions. *Nord. Pulp. Paper Res. J.* **32**, **2017**, 550-571.
- A21 **Sipponen, M.H.**, Smyth, M., Leskinen, T., Johansson, L., Österberg, M. All-lignin approach to prepare cationic colloidal lignin particles: stabilization of durable Pickering emulsions. *Green Chem.* **19**, **2017**, 5831-5840.
- A20 Silventoinen, P., **Sipponen, M.H.**, Holopainen-Mantila, U., Poutanen, K. Sozer, N. Use of air classification technology to produce protein-enriched barley ingredients. *J. Food Eng.* **222**, **2018**, 169-177.
- A19 **Sipponen, M.**, Mäkinen, O., Rommi, K., Heiniö, R-L., Holopainen-Mantila, U., Hokkanen, S., Hakala, T. & Nordlund, E. Biochemical and sensory characteristics of the cricket and mealworm fractions from supercritical carbon dioxide extraction and air classification. *Eur. Food Res. Technol.* **244**, **2017**, 19-29.
- A18 Pastinen, O., Nyssölä, A., Pihlajaniemi, V., **Sipponen, M. H.** Fractionation process for the protective isolation of ergosterol and trehalose from microbial biomass. *Process Biochem.* **58**, **2017**, 217-223.

- A17 **Sipponen, M. H.**, Rojas, O. J., Pihlajaniemi, V., Lintinen, K. & Österberg, M. Calcium Chelation of Lignin from Pulping Spent Liquor for Water-Resistant Slow-Release Urea Fertilizer Systems. *ACS Sustainable Chem. Eng.* 5, 2017, 1054-1061.
- A16 **Sipponen, M. H.**, Özdenkci, K., Hassan, R., Melin, K., Sarwar, G. & Oinas, P. Hydrothermal liquefaction of softwood: Selective chemical production under oxidative conditions. *ACS Sustainable Chem. Eng.* 4, 2016, 3978-3984.
- A15 Lintinen, K., Latikka, M., **Sipponen, M. H.**, Ras, R. H. A., Österberg, M. & Kostiaainen, M. A. Structural diversity in metal-organic nanoparticles based on iron isopropoxide treated lignin. *RSC Adv.* 6, 2016, 31790-31796.
- A14 Pihlajaniemi, V., **Sipponen, M. H.**, Kallioinen, A., Nyssölä, A. & Laakso, S. Rate-constraining changes in surface properties, porosity and hydrolysis kinetics of lignocellulose in the course of enzymatic saccharification. *Biotechnol. Biofuels.* 9, 2016, 1-12.
- A13 Pihlajaniemi, V., **Sipponen, M. H.**, Pastinen, O., Nyssölä, A. & Laakso, S. The effect of direct and counter-current flow-through delignification on enzymatic hydrolysis of wheat straw, and flow limits due to compressibility. *Biotechnol. Bioeng.* 113, 2016, 12, 2605-2613.
- A12 **Sipponen, M. H.**, Pihlajaniemi, V., Vainio, H., Palonen, E., Hokkanen, S., Vahvaselkä, M., Pastinen, O., Nyssölä, A., Laakso, S. Integrating the opposites of biofuel production: absorption of short-chain alcohols into oleaginous yeast cells for butanol recovery and wet-extraction of microbial oil. *Green Chem.* 18, 2016, 2775-2781.
- A11 Pihlajaniemi, V., **Sipponen, M. H.**, Liimatainen, H., Sirviö, J.A., Nyssölä, A., Laakso, S. Weighing the factors behind enzymatic hydrolysability of pretreated lignocellulose. *Green Chem.* 18, 2016, 1295-1305.
- A10 Muddassar, H.R., **Sipponen, M. H.**, Melin, K., de Kokkonen, D., Pastinen, O., Golam, S. Effects of Catalysts and pH on Lignin in Partial Wet Oxidation of Wood and Straw Black Liquors. *Ind. Eng. Chem. Res.* 54, 2015, 7833-7840.
- A9 Littunen, K., Kilpeläinen, P., Junka, K., **Sipponen, M.**, Master, E.R., Seppälä, J. Effect of Xylan Structure on Reactivity in Graft Copolymerization and Subsequent Binding to Cellulose. *Biomacromolecules* 16, 2015, 1102-1111.
- A8 Pihlajaniemi, V., **Sipponen, M. H.**, Pastinen, O., Lehtomäki, I., Laakso, S. Yield optimization and rational function modelling of enzymatic hydrolysis of wheat straw pretreated by NaOH-delignification, autohydrolysis and their combination. *Green Chem.* 17, 2015, 1683-1691.
- A7 **Sipponen, M. H.**, Pihlajaniemi, V., Pastinen, O., Laakso, S. Reduction of surface area of lignin improves enzymatic hydrolysis of cellulose from hydrothermally pretreated wheat straw. *RSC Adv.* 4, 2014, 36591-36596.
- A6 **Sipponen, M. H.**, Laakso, S., Baumberger, S. Impact of ball milling on maize (*Zea mays* L.) stem structural components and on enzymatic hydrolysis of carbohydrates. *Ind. Crops. Prod.* 61, 2014, 130-136.
- A5 Pihlajaniemi, V., Sipponen, S., **Sipponen, M. H.**, Pastinen, O., Laakso, S. Enzymatic saccharification of pretreated wheat straw: Comparison of solids-recycling, sequential hydrolysis and batch hydrolysis. *Bioresour. Technol.* 153, 2014, 15-22.
- A4 **Sipponen, M. H.**, Pihlajaniemi, V., Littunen, K., Pastinen, O., Laakso, S. Determination of surface-accessible acidic hydroxyls and surface area of lignin by cationic dye adsorption. *Bioresour. Technol.* 169, 2014, 80-87.
- A3 **Sipponen, M. H.**, Pihlajaniemi, V., Sipponen, S., Pastinen, O., Laakso, S. Autohydrolysis and aqueous ammonia extraction of wheat straw: effect of treatment severity on yield and structure of hemicellulose and lignin. *RSC Adv.* 4, 2014, 23177-23184.
- A2 **Sipponen, M. H.**, Lapierre, C., Méchin, V., Baumberger, S. Isolation of structurally distinct lignin-carbohydrate fractions from maize stem by sequential alkaline extractions and endoglucanase treatment. *Bioresour. Technol.* 133, 2013, 522-528.
- A1 **Sipponen, M. H.**, Pastinen, O.A., Strengell, R., Hyötyläinen, J.M.I., Heiskanen, I.T., Laakso, S. Increased Water Resistance of CTMP Fibres by Oat (*Avena sativa* L.) Husk Lignin. *Biomacromolecules* 11, 2010, 3511-3518.

B. Non-refereed scientific articles

- B1. Özdenkci, K., Mudassar, R.H., Melin, K. **Sipponen, M.**, Sarwar, G., Oinas, P. Aqueous Phase Oxidative Treatment of Saw Dust. [Conference paper](#). The 6th Nordic Wood Biorefinery Conference, Helsinki, 2015.

C. Theses

- C2 **Sipponen, M.H.** Effect of lignin structure on enzymatic hydrolysis of plant residues, [Doctoral thesis](#), Aalto University, 2015, 128 p.
- C1 **Sipponen, M.H.** Entsyymit puunjalostusteollisuudessa: puukuidun kemoentsymaattinen modifiointi, Master's thesis, (Finnish), Helsinki University of Technology, 2009, 132 p.

D. Patents

- D5 Österberg, M., **Sipponen, M.**, Kostiaainen, M., Äkräs, L., Rivière, G., Zhang, X., Lignin particle based hydrogel and the method for preparation of lignin colloidal particles by solvent evaporation process. [WO2020109671](#) (A1).
- D4 Nordlund, E., Hakala, T., Rommi, K., **Sipponen, M.**, Kajala, I. Arthropod products, methods of preparing the same, and uses thereof, [FI127853B](#).

- D3 Vainio, H., Myllymäki, O., Pihlajaniemi, V., **Sipponen, M.**, Laakso, S., Lehtomäki, I., Pastinen, O., Koskinen, P., Method of processing lignocellulosic material using a cationic compound, [EP3080288B1](#), 2015-06-18.
- D2 Vainio, H., **Sipponen, M.**, Laakso, S., Pastinen, O., Lehtomäki, I., Koskinen, P., Laamanen, M. Method for producing single cell oil from lignocellulosic materials, [US9890403B2](#), 2018-02-13.
- D1 Vainio, H., Pihlajaniemi, V., **Sipponen, M.**, Pastinen, O., Lehtomäki, I., Laakso, S., Myllymäki, O., Koskinen, P., Method for processing lignocellulosic material using an alkaline delignification agent, [US10604777B2](#), 2015-06-18.

First author: 17 (+2 theses), corresponding author: 23, last author: 4