2019 Summary of Activities

Bio-based Colloids and Materials group

Department of Bioproducts and Biosystems
School of Chemical Engineering
Aalto University

2019

BiCMat

Bio-based Colloids & Materials

- **BiCMat Website:** https://www.aalto.fi/bicmat
- **Instagram:** https://www.instagram.com/bicmatgrouprojas/
- **Twitter:** https://twitter.com/GroupRojas
- **Facebook:** https://www.facebook.com/rojas.bicmat
- **FinnCERES Website:** www.finnceres.fi
- **Materials Platform Website:** Link
- **HYBER Center of Excellence Website:** www.aalto.fi/en/hyber

Introduction

BiCMat Research Strategy

Our core activities involve biobased materials of different size scales, mainly those displaying large interfacial areas such as fibers (micro/nano fibers), fiber networks, particles, colloids and multiphase systems.

BiCMat Focus

- Nano/microfibrillar ligno-cellulose, nanocrystals & bacterial cellulose. Nanochitin and dairy colloids
- Multiphase systems: dispersions, foams, gels, membranes and aerogels.
- Stimuli-responsive materials.
- Proteins, enzymes and (bio)sensing.

Foreword

2019 was an exciting year for BiCMat and its members. The year was packed with activities and a great scientific productivity. A most important highlight is “BiCMat” newborns: *Congratulations to the proud parents:* ***Kati M., K. Helanto, N. Yau, S. Huan, B. Long, X. Zhang***.
In addition, **L. Wang** got married and **R. Ajdary** became engaged.

Special thanks go to **Jukka Hassinen** (FinnCERES manager), **Heidi Henrickson** (Materials Platform Coordinator) and her team, as well as **Mirkka Jones** (HYBER Coordinator). **Johanna Majoinen** (BioElCell coordinator), **Stina Grönqvist** and **Tekla Tammelin**, both from VTT and FinnCERES partners. **Marja Kärkkäinen** for her loyalty and support as well as **Leena-Sisko** and **Joe Campbell** (XPS). We also sincerely thank the assistance of BiO2 HR Manager, **Sanni Mero** and Controller **Jenni Ala-Hongisto**. **Sorana Nagy** (budget) and **Harri Koskinen** (IT) are also thanked.

We express our gratitude to **Outi Söderberg** (Grants), **Maria Söderholm** (ACRIS), **Ulla Ahlgren** (Travel), **Sirje Liukko** (Doctoral planning).

We are in debt to our colleagues in the HYBER Center of Excellence, **Olli Ikkala, Markus Linder** and **Merja Penttilä** as well as the HYBER faculty members.

Our department and university leadership are gratefully acknowledged for their support (specially, Dept. Head **Herbert Sixta**, CHEM Dean **Kristiina Kruus**, VP Innovation **Janne Laine**).

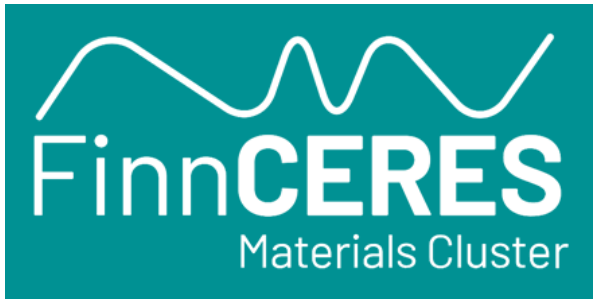
We fail to mention many collaborators, supporters and persons that have been important to BiCMat. Our apologies! You and all colleagues in BiO2 and CHEM continuously create a great working atmosphere.

BiCMat sponsors

Advanced Grant

"BioELCell" (788489)

NordForsk



BUSINESS FINLAND

ACADEMY OF FINLAND

EASTMAN

H Y B E R

INNPAPER

Molecular Engineering of Biosynthetic Hybrid Materials Research

Aalto University

PhD & MS students

Konrad Klockars
ERC

Rubina Ajdary
BioFuture
TUTLI /UPM

Ling Wang
LIFT/UPM,
end 2020

Janika Lehtonen
ERC, end 2020

Tero Kämäräinen
ERC, end 2020

Roozbeh Abidnejad
ERC, 5-20

Luiz Greca
CHEM

Katariina Solin
CHEM

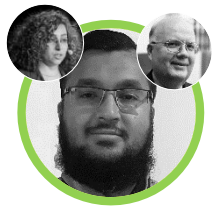
Ya Zhu
CSC, China

Bin Zhao
CSC, China

Nina Elomaa
ERC, 2-20

Laura Usai
ERC, 4-20

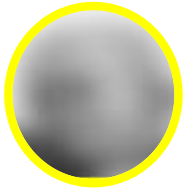
Co-supervision



Haider Iftikhar
FinnCERES
Peter Lund

Eva Pasquier
ERC,
Grenoble

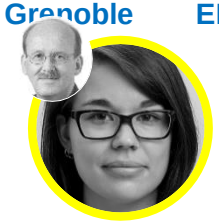
Nazanin Zanjanizadeh
ERC/TUTLI



Sofia Costas
Univ Minho

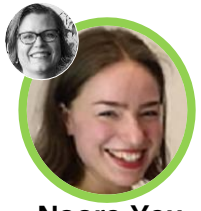
Taru Koitto
M. Balakshin

Alvaro Gonzalez
Arauco, Chile



Annika Ketola
VTT

Karoliina Helanto
Metsä



Noora Yau
FinnCERES

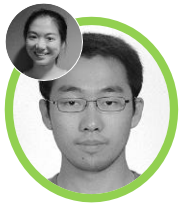
Seniors

Blaise Tardy
ERC

Bruno Mattos
ERC

Johanna Majoinen
ERC

Maryam Borghei
INPAPER



Guang Chu
FinnCERES

Wenchao Xiang
ERC

Marco Beaumont
ERC

Jukka Hassinen
FinnCERES

Kati Miettunen
AKA

Heidi Henrickson
Mat Platf +
FinnCERES

Sanna Hokkanen
Valio

Annamari Jukkola
Foundation

Monir Imani
Patrick Gane

Leena Sisko
BiO2

Marja Kärkkäinen
BiO2

Visitors

Filipe Ferreira
Brasil, 01-20

Shi Xuetong
ERC, 04-20

Yang Meng
ERC,China

Xiao Zhang
China, 08-20

Eric Hahnert
Fulbright

Shasha Guo
China, 04-20

Urs Dierker
ERC

Gonghua Hong
China, 06-21

Index (links)

Group member International Exchange

Janika Lehtonen to Deakin University, Institute for Frontier Materials. Host: Dr. Ludovic Dumée, ARC DECRA Senior Research Fellow. 6 months, 2019

Maryam Borghei and **Katariina Solin** to Sorbonne University, France (hosts: Prof. Hubert Perrot & Dr. Ozlem Sel), April 2019:
Maryam Borghei and **Katariina Solin** to Cidetec Research Institute, Spain (host: Dr. Ana Vinuales), May 2019

Blaise Tardy to the Department of Chemical Engineering (Ray Degastine and Frank Caruso), University of Melbourne, Australia, November 25, 2019 to January 5, 2020

To menu

PhD, Licentiate and MS defenses (7)

Annamari Jukkola (PhD)
"Fractionation of Milk Fat Globule Membranes in Butter Processing"
May 31, 2019
Opponent: Dr. Jose Sanchez Marcano, Université de Montpellier, Institut Européen des Membranes

Wenchao Xiang (PhD)
"Interfacial Stabilization of Multiphase Systems with (Ligno)cellulosic (Nano)materials and Surfactants"
December 5, 2019 .
Opponent: Professor Lennart Bergström, Stockholm University, Sweden

Antti Kilpinen (MSc), "Regenerated cellulose-based films and laboratory scale equipment for their production", August 16, 2019

Xuetong Shi (MSc), "Functionalized nanocellulose supported phase change material for thermal energy storage"
October 1st, 2019

Stefan Winklehner (MSc), "Compatibilization of plasticized cellulose acetate and thermoplastic elastomer with a multifunctional branching agent done by reactive extrusion", November 18, 2019

Olli-Pekka Lehtinen (Licentiate), Colloidal structures of phospholipids in vegetable oil and their potential usage in surface treatment of nanocellulose for food applications", November 19, 2019

Mikko Laine (MSc), "Biosynthetic Production of Bacterial Cellulose-Chitosan Composite by Modifying Hestrin-Schramm Broth Sugar Composition", December 9, 2019

To menu

Hosted seminars (17)

Carlos Pascoal Neto, The Navigator company, Portugal. January 21, 2019.

Alejandro Carvajal and Jose Herrera, The Colonia2go GmbH company, Germany and Colombia. January 31, 2019.

Run-Cang Sun, Director, Beijing Key Laboratory of Lignocellulosic Chemistry, Industrial Biorefinery of Lignocellulose for Biomaterials, Bioethanol, and Chemicals in China, February 14, 2019.

Jordi Esquena, Surface Chemistry Group, Institute of Advanced Chemistry of Catalonia (IQAC), Consejo Superior de Investigaciones Científicas (CSIC), Barcelona, Spain. Hydrogel Formation and encapsulation in Water-in-Water (W/W) emulsions, Abril 11, 2019


Visit Run-Cang Sun

Jordi Esquena, Surface Chemistry Group, Institute of Advanced Chemistry of Catalonia (IQAC), Consejo Superior de Investigaciones Científicas (CSIC), Barcelona, Spain. Design, properties and applications of porous materials obtained in highly concentrated emulsions, April 12, 2019.

Md Sarwar Jahan, Chief Scientific Officer, Pulp and Paper Research Division, BCSIR Laboratories, Dhaka and Mr. Harri Ahveninen, Senior Associate, Vision Hunters' Bangladesh expert, April 24, 2019.

Cosima Stubenrauch, Institute of Physical Chemistry, University of Stuttgart, Germany. Microfluidics: A Tool to Control Pore Size Polydispersity in Polysaccharide Foams, May 10, 2019.

Jose Sanchez Marcano, Directeur de Recherche, Institut Europeen des Membranes, Montpellier, France. Enzyme-grafted ceramic membranes in enzymatic membrane reactors: an experimental and modeling approach, May 29, 2019

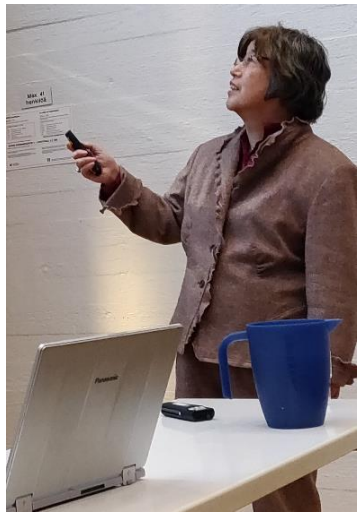
Ray Dagastine, Department of Chemical Engineering, University of Melbourne, Australia. Dynamic interactions between micro-drops and micro-bubbles: adhesion and mass transport, June 12, 2019

Ray Dagastine, Department of Chemical Engineering, University of Melbourne, Australia. Novel methods to measure the diffusion and interactions of anisotropic nano-particles near a confining interface, June 13, 2019.

Gordon Selling – United States Dept. of Agriculture, Agricultural Research Service, Peoria, IL, USA. Teaching an Old Dog New Tricks – Amylose Inclusion Complexes, July 15, 2019

Washington L.E. Magalhães, Nanotecnologia Embrapa Florestas. Embrapa Activities, August 10, 2019

Heather Trajano, Chemical and Biological Engineering, University of British Columbia. Capturing the Complexity of Hemicellulose Hydrolysis, September 19, 2019



Toyoko Imae, Honorary Chair Professor of Graduate Institute of Applied Science and Technology and Joint Chair Professor of Department of Chemical Engineering, National Taiwan University of Science and Technology, Taiwan. Activity of catalysts embedded in cellulose nanofiber films, October 8, 2019.

Lennart Bergström, Department of Materials and Environmental Chemistry, Stockholm University, Sweden. Nanocellulose based materials: assembly and interfacial engineering, December 4, 2019

Other visitors hosted:

- Antonio Cardenas, Universidad de Los Andes, Venezuela, July 9, 2019
- Bomin Lee, Yemi Yang, Global Challengers, Seul National University, July 11, 2019
- Steve Kelly (NCSU) and TappiNano support team, August 27, 2019
- Claus Felby, Head of Biotech, Novo Nordisk Fonden and, Dina Petranovic Nielsen, Senior Scientific Officer, Novo Nordisk, October 31, 2019
- Maria Intscher, Vice President & Design Director, Ready-to-Wear Vera Wang Group, November 2019
- Beijing working group in Finland, Ziqi Zhu, Zhongguancun Science Park (Z-park), Jun Xue, Founding Partner, THG Ventures Co., Ltd and others. December 2, 2019





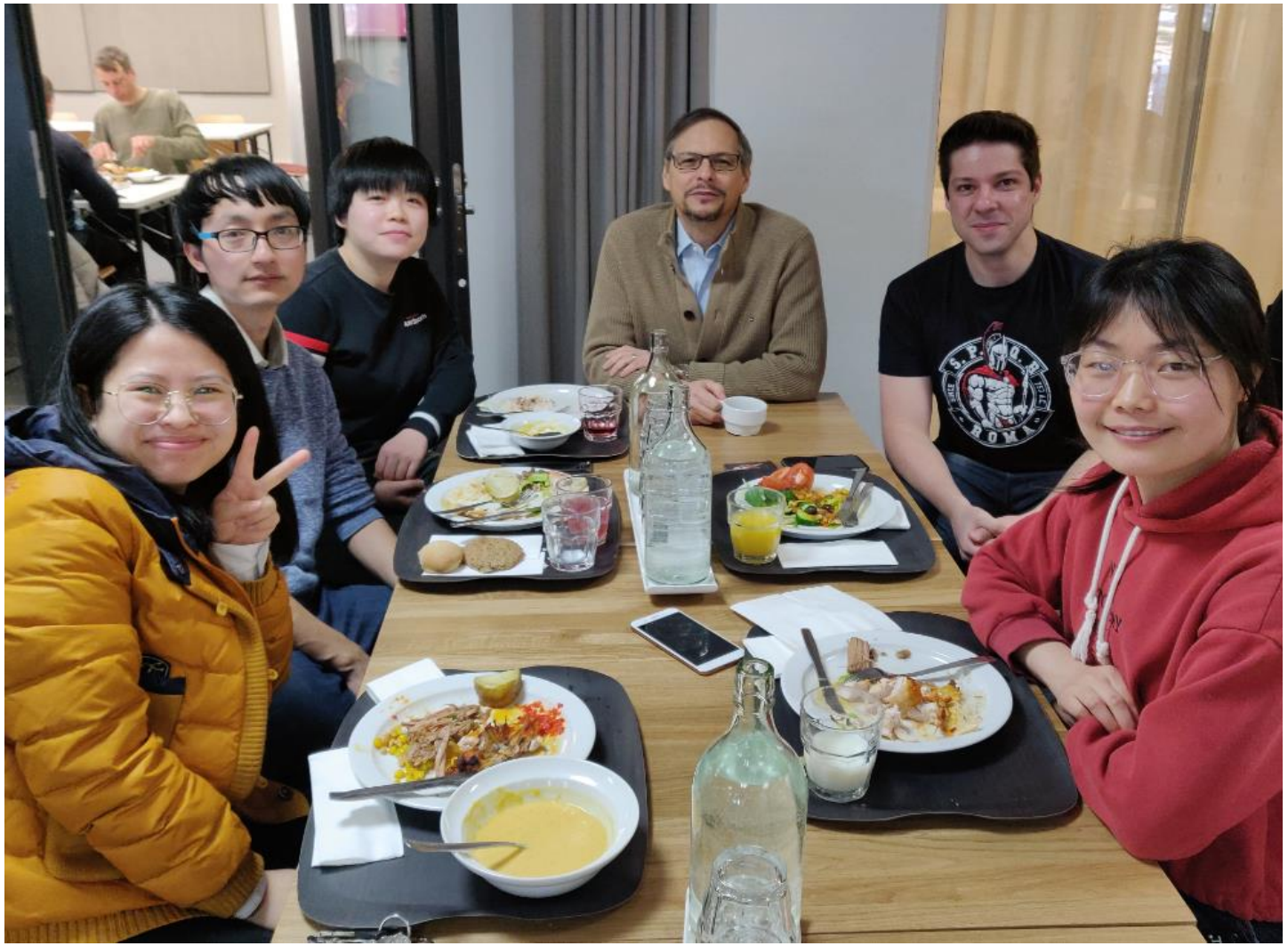


To menu

Hosted research Exchanges (29)

1. **Ruth Rojas**, Chemistry Department, Universidad Nacional, Costa Rica, January 28 - February 20, 2019
2. **Kenly Araya**, Chemistry Department, Universidad Nacional, Costa Rica, January 28 - February 20, 2019
3. **Gabriela L. Berto**, Escola de Engenharia de Lorena, Universidade de São Paulo, Laboratório de Biocatálise e Bioprodutos Renováveis – BBioPRO, August 12, 2018-July of 2019
4. **Lisandra de Castro Alves**, Materials Science, University of Santiago de Compostela, July 4 to August 20, 2019.
5. **Caio Gomide Otoni**, University of Campinas, Brazil, May 1, 2019 and December 31, 2019
6. **Filipe Vargas**, University of Campinas, Brazil, January 2019 to January 2020
7. **Prof. Shi Yan**, Tianjin University of Commerce, Tianjin, P.R. China, July 22, 2019 to October 31, 2019
8. **Eva Pasquier,** Gronoble, France. Gabriela Berto, Escola de Engenharia de Lorena, Universidade de São Paulo.
9. **Xiao Zhang**, College of Material Science and Engineering, Northeast Forestry University, 1.8 years
10. **Yang Meng**, College of Materials Science and Technology, Beijing Forestry University, 1 year

11. **Carlos Eduardo Silveira da Silva**, Ciências Ambientais e Florestais (UFRRJ), Brazil, August 12, 2018- August, 2019
12. **Niu Xun**, Ph.D. student, College of Chemical Engineering, Nanjing Forestry University, August 1, 2018 to April 30, 2020.
13. **Antonio Maria Borrero Lopez**, Química Física y Ciencia de los Materiales, Universidad de Huelva, Spain, 3 months.
14. **Washington Luiz Esteves Magalhães**, Embrapa Florestas Empresa Brasileira de Pesquisa Agropecuária (Embrapa), Curitiba, Brazil, August 6, 2019-Septmeber 30, 2019
15. **Hongbin Xie**, College of Bioresources Chemical and Materials Engineering, Shaanxi University of Science and Technology, November 10, 2018 to March 10, 2019.
16. **Lin Li** , College of Bioresources Chemical and Materials Engineering, Shaanxi University of Science and Technology, November 10, 2018 to March 10, 2019.
17. **Peiyao Wang** , College of Bioresources Chemical and Materials Engineering, Shaanxi University of Science and Technology, November 10, 2018 to March 10, 2019.
18. **Xiaoli Zhen** , College of Bioresources Chemical and Materials Engineering, Shaanxi University of Science and Technology, November 10, 2018 to March 10, 2019.
19. **Shasha Guo**, December 8, 2019-March 1, 2020
20. **Gonghua Hong**, Beijing Forestry University, 15 October, 2019 December 2020.
21. **Catia Almeida**, The Navigator Company, Portugal, October 7 to November 11, 2019



22. **André Luiz Missio,** UFSM, Executive Editor - Brazilian J. Wood Sci., September 01 to October 5, 2019.
23. **Carmen Hervés**, Department of Advanced Chemistry of Catalonia, Spanish National Research Council, Spain, 3 months.
24. **Marco Beaumont**, University of Natural Resources and Life Sciences (BOKU), Vienna, Austria, Cellulose Nanoparticles, 2 months.
25. **Jorge Luengo**, CMPC, Chile.
26. **Eric Hahnert** as Fulbright scholar from University of Louisville, 1 year.
27. **Emily Facchine**, North Carolina University, 5 months.
28. **Soo Ah Jin** North Carolina University, 5months.
29. **Ossi Kettle**, Middle School, TET student, April 2019.

Farewell Lisandra de Castro Alves

Steve Kelly (NCSU) and TappiNano support team, August 2019

Forest Academy

Ossi Kettle, April 2019

To menu

BiCMat cooperation with Lignin group of Mikhail Balakshin

- Aalto grant on AI-WOOD (related to use of Artificial Intelligence and in cooperation with Prof. Patrick Rinke)
- Cooperation in LIFT Project (NordForsk)
- Cooperation on the use of lignin from Hydrothermal Treatment (HTT)
- Recent cooperation article: Lourençon T.V., Greca L.G., Tarasov D., Borrega M., Tamminen T., **Rojas O.J**., Balakshin M.Y., Lignin-first integrated hydrothermal treatment (HTT) and synthesis of low-cost biorefinery particles, **ACS Sustainable Chemistry & Engineering**, Accepted (2020). DOI: 10.1021/acssuschemeng.9b06511

To menu

Examiner/opponent activities in 2019 (6)

Zhaoxuan Feng, From Polysaccharides to Functional Materials for Trace Pharmaceutical Adsorption, KTH Royal Institute of Technology, Department of Fibre and Polymer Technology, May 23, 2019

Yunjuan He, Corrosion protection and nanomechanical properties of waterborne acrylate-based coating with and without nanocellulose on carbon steel, KTH Royal Institute of Technology, Department of Chemistry, Stockholm, November 22 - 2019

Tor Sewring, Precipitation of Kraft Lignin from Aqueous Solutions, Chalmers University of Technology, Department of Chemistry and Chemical Engineering, Gothenburg, Sweden, March 28, 2019

Sophie Groult, Pectin-based aerogels: Advanced materials for thermal insulation and drug delivery applications, MINES ParisTech, Mécanique Numérique et Matériaux, Antibes France, May 28, 2019 (committee member)

Preeti Tyagi, Nanocellulose-based Sustainable Barrier and Antimicrobial Coatings, North Carolina State University, Department of Forest Biomateriasl, July 8, 2019 (committee member)

Alexander Sokolov, Pulsed corona discharge for wastewater treatment and modification of organic material, Lappeenranta University of Technology, April 2019 (pre-examiner)

To menu

Material Exhibitions

- Dutch Design Week, Eindhoven, October 19-27, 2019.
- Materials Matter Exhibition 3.0 at Finlandia Hall, 2019.
- SLUSH, 2019.

Noora Yau and Urs Dierker are active in the use of nanomaterial for art and design in collaboration with several members of the group (K. Klockars, B. Tardy, J. Lehtonen and others.
Collaborators: Pirjo Kääriäinen, Lily Diaz-Kommonen and Kirsi Niinimäki

To menu

Awards to group members

- **Anurodh Tripathi** for the James K. Ferrell Outstanding PhD Graduate Award, Chemical and Biomolecular Engineering, North Carolina State University, 2019
- **Anurodh Tripathi,** Distinguished Graduate Dissertation Award, 2019 Distinguished Graduate Dissertation Award from the College of Engineering, 2019
- **Prajesh Adhikari,** Nonwovens Institute Best Presentation Award
- **Rubina Ajdary**, Young Researchers Marcus Wallenberg Young Researchers Challenge (€ 800), 2019.
- **Rubina Ajdary**, Encouragment grant, Tekniikan Edistämissäätiö, TES (€ 5000)
- **Ling Wang**, Kaute foundation (PoDoCo program), “High-performance carbon fibre from wood”
- **Ling Wang**, Puunjalostus-insinöörit for her attendance to the ‘Tappi 2019 Intl. Conference Nanotechnology for Renewable Materials
- **Maryam Borghei**, #EITJumpstarter 2019, Best European Association Training
- **BiCMat**, receives TUTLI funds to Develop Individualised Biomaterials for Medical Treatment (Business Finland)
- **Blaise Tardy**, MSE visiting Fellowship for visit in Australia
- **Wenchao Xiang,** Puunjalostusinsinoorit, Research Grant 2019
- **Wenchao Xiang,** Engineer Travel Grant Scholarship (Insinöörien matka-apurahaston stipendit) 2019”
- **Meri Ludhal**, Heinzel-Mondi-Sappi Award (€ 3333), 2019
- **Alexey Khakalo**, Heinzel-Mondi-Sappi Award (€ 3333), 2018
- **Meri Lundahl**, Aalto University, CHEM Best Dissertation, 2019
- **Annamari Jukkola**, Jenny & Antti Wihuri foundation-PD research (€ 15000), 2019
- **Jukka Hassinen**, special mention as CHEM Facilitator of 2019
- **Kati Miettunen**, Tandem Forest Value project funding (€ 200k,1.9.2020-31.8.2024)
- **Alexey Khakalo** (VTT), Niilo Ryti Award (€ 5000), 2019
- **Hannes Orelma** (VTT), promoted as Team Leader of “Functional Cellulose”.

To menu

Surprise celebration on behalf of BiCMat for Orlando Rojas

Farewell lunch with Rafael Grande, visiting postdoc

Promotion Evaluations

1. Name not disclosed , Provas de Agregação, nanocellulose: an endless source of innovative bio-based materials, Universidade de Aveiro, Portugal, June 17, 2019

2. Name not disclosed Imperial College, Department of Aeronautics, Reader in Polymeric Materials

3. Name not disclosed Professorship promotion, Faculty of Physics and Chemistry, University of Cambridge, December 2019

4. Name not disclosed Docent in Food Materials Science, Faculty Council of the Faculty of Agriculture and Forestry, University of Helsinki, March 07, 2019.

5. Name not disclosed , Tier 2, Canada Research Chair in Advanced Renewable Materials, March 6, 2019

Jury for promotion examination in University of Aveiro, Portugal

To menu

BiCMat Journal Publications in 2019 (50)

1. Tardy B.L., Richardson J.J., Greca L.G., Guo J., Ejima H., Rojas O.J., Exploiting supramolecular interactions from polymeric colloids for strong anisotropic adhesion between solid surfaces, **Advanced Materials**, accepted (2020). DOI:

2. Tardy B.S., Mattos B.D., Garcia Greca L.G., Kämäräinen T., Klockars K.W., Rojas O.J., Biomimetic Templating: Tessellation of Chiral-Nematic Cellulose Nanocrystal Films by Microtemplating, **Advanced Functional Materials**, 29, 1808518 (2019). DOI: 10.1002/adfm.201808518

3. Huan S., Mattos B.D., Ajdary R., Xiang W., Bai L., Rojas O.J., Two-Phase Emulgels for Direct Ink Writing of Skin-bearing Architectures, **Advanced Functional Materials**, 1902990 (2019). DOI: 10.1002/adfm.201902990

4. Liu L., Bai L., Tripathi A., Yu J., Wang Z., Borghei M., Fan Y., Rojas O.J., High Axial Ratio Nanochitins for Ultra-Strong and Shape-Recoverable Hydrogels and Cryogels via Ice Templating, **ACS Nano**, 13, 2927–293 (2019). DOI: 10.1021/acsnano.8b07235

5. Cusola O., Roncero M.B., Vidal T., Rojas O.J., Lignin particles for multifunctional membranes, anti-oxidative microfiltration, patterning and 3D structuring, **ACS Applied Materials and Interfaces**, 11, 45226-45236 (2019). DOI: 10.1021/acsami.9b16931

6. Beaumont M., Rosenfeldt S., Tardy B.L., Gusenbauer C., Khakalo A., Nonappa, Opietnik M., Potthast A., Rojas O.J., Rosenau T., Soft cellulose II nanospheres: sol–gel behaviour, swelling and material synthesis, **Nanoscale**, 11, 17773-17781 (2019). DOI: 10.1039/C9NR05309C

7. Ferreira F. V., Souza L.P., Martins T.M.M, Lopes J.H., Mattos B.D., Mariano M., Pinheiro I.F., Valverde T.M., Livi S., Camilli J.A., Goes A.M., Gouveia R.F., Lona L.M.F., Rojas O.J., Nanocellulose/Bioactive Glass Cryogel as Scaffolds for Bone Regeneration, **Nanoscale**, 11, 19842-19849 (2019). DOI: 10.1039/C9NR05383B

8. Tripathi A., Tardy B.L., Khan S.A., Liebner F., Rojas O.J., Expanding the upper limits of robustness of cellulose nanocrystal aerogels: outstanding mechanical performance and associated pore compression response of chiral-nematic architectures, **Journal of Materials Chemistry A**, **7**, 15309-15319 (2019). DOI: 10.1039/c9ta03950c

9. Gonzalez-Vogel A., Rojas O.J., Exploiting electroconvective vortices in electrodialysis with high-frequency asymmetric bipolar pulses for desalination in overlimiting current regimes, **Desalination**, 474, 114190 (2020). DOI: 10.1016/j.desal.2019.114190

10. Poskela A., Miettunen K., Borghei M., Vapaavuori J., Greca L.G., Lehtonen J., Solin K., Ago M., Lund P.D., Rojas O.J., Nanocellulose and Nanochitin Cryogels Improve the Efficiency of Dye Solar Cells, **ACS Sustainable Chemistry & Engineering**, 7, 10257-10265 (2019). DOI: 10.1021/acssuschemeng.8b06501

11. Richardson, J., Tardy B.S., Guo, J., Liang K., Rojas O.J., Hirotaka E., Continuous Metal-Organic Framework Biomineralization on Cellulose Nanocrystals: Extrusion of Functional Composite Filaments, **ACS Sustainable Chemistry & Engineering**, 7, 6287–6294 (2019). DOI: 10.1021/acssuschemeng.8b06713

12. Grande R., Bai L., Wang L., Xiang W., Ikkala O., Carvalho A.F.K., Rojas O.J., Nanochitins of varying aspect ratio and properties of microfibers produced by interfacial complexation with seaweed alginate, **ACS Sustainable Chemistry & Engineering**, accepted (2020). DOI: 10.1021/acssuschemeng.9b06099

13. Lourençon T.V., Greca L.G., Tarasov D., Borrega M., Tamminen T., Rojas O.J., Balakshin M.Y., Lignin-first integrated hydrothermal treatment (HTT) and synthesis of low-cost biorefinery particles, **ACS Sustainable Chemistry & Engineering**, Accepted (2020). DOI: 10.1021/acssuschemeng.9b06511

14. Wang L., Ago M., Borghei M., Ishaq A., Papageorgiou A.; Lundahl M., Rojas O.J., Conductive carbon microfibers derived from wet-spun lignin/nanocellulose hydrogels, **ACS Sustainable Chemistry & Engineering**, 7, 6013–6022 (2019). DOI: 10.1021/acssuschemeng.8b06081

15. Bai L., Huan S., Xiang W., Liu L., Yang Y., Nugroho R.W.N., Fan Y., Rojas O.J., Self-assembled networks of short and long chitin nanoparticles for oil/water interfacial superstabilization, **ACS Sustainable Chemistry & Engineering**, 7, 6497–6511 (2019). DOI: 10.1021/acssuschemeng.8b04023

16. Kämäräinen T., Ago M., Greca L.G., Tardy B.L., Müllner M., Johansson L.-S., Rojas O.J., Morphology-controlled synthesis of colloidal polyphenol particles from aqueous solutions of tannic acid, **ACS Sustainable Chemistry & Engineering**, 20, 16985-16990 (2019). DOI: 10.1021/acssuschemeng.9b02378

17. Bai L., Lv S., Xiang W. Huan S., McClements D.J., Rojas O.J. Oil-in-water Pickering emulsions via microfluidization with cellulose nanocrystals: 1. Formation and stability, **Food Hydrocolloids**, 96, 699-708 (2019). DOI: 10.1016/j.foodhyd.2019.04.038

18. Bai L., Lv S., Xiang W. Huan S., McClements D.J., Rojas O.J. Oil-in-water Pickering emulsions via microfluidization with cellulose nanocrystals: 2. In vitro lipid digestion, **Food Hydrocolloids**, 96, 709-716 (2019). DOI: 10.1016/j.foodhyd.2019.04.0389

19. Jukkola A., Partanen R., Wenchao X., Heino A., Rojas O.J., Food emulsifiers based on Milk Fat Globule Membranes and their Interactions with calcium and casein phosphoproteins, **Food Hydrocolloids**, 94, 30–37 (2019). DOI: 10.1016/j.foodhyd.2019.03.005

20. Jukkola A., Hokkanen S., Kämäräinen T., Partanen R., Heino A., Rojas O.J., Changes in milk fat globules and membrane lipids under the shear fields of microfiltration and centrifugation, **Journal of Membrane Science**, 573, 218-225 (2019). DOI: 10.1016/j.memsci.2018.12.007

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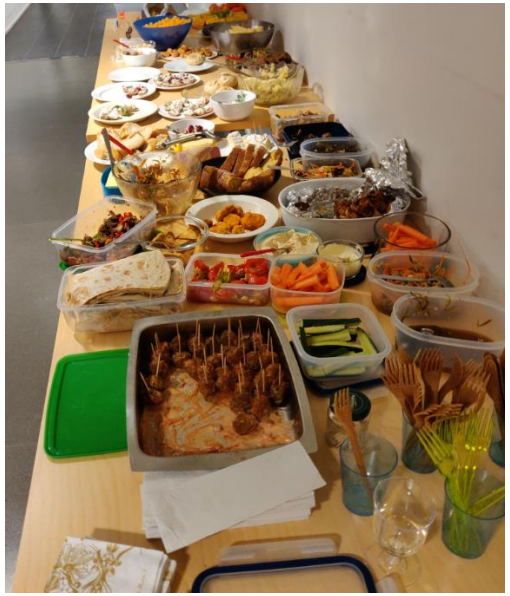

Christmas dinner Dec 2019

To menu

BiCMat Book Chapter Publications in 2019 (3)

1. Salas C., Hubbe M.A., Rojas O.J., Nanocellulose Applications in Papermaking in “Production of Materials from Sustainable Biomass Resources” (Z. Fang, R.L. Smith., X. Tian, Eds.), p61-96, Springer Singapore (2019). DOI: 10.1007/978-981-13-3768-0_3

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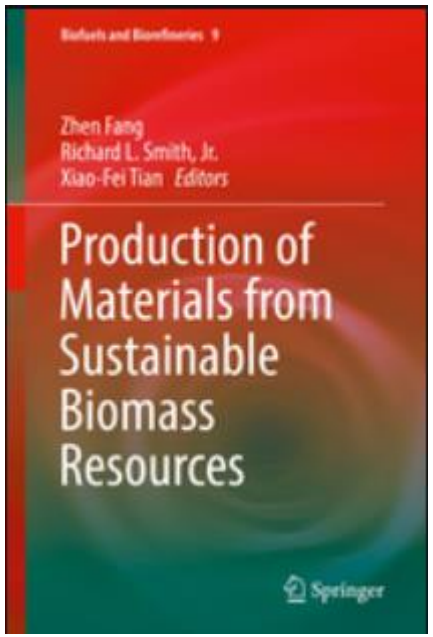
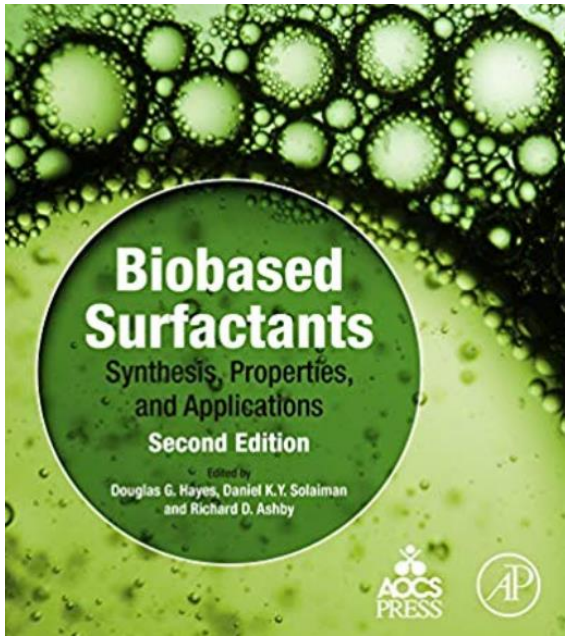
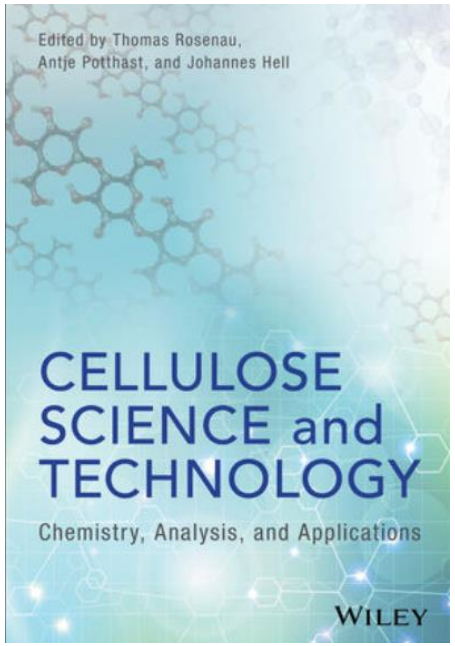
3. Huan S., Ago M., Borghei M., Rojas O.J., “Nanocelluloses at the Oil–Water Interface: Emulsions Toward Function and Material Development”, in “Cellulose Science and Technology: Chemistry, Analysis, and Applications”, First Edition, Rosenau T., Potthast A., Hell J. (Eds), Chapter 16, p393-421, John Wiley&Sons, Inc., ISBN: 9781119217589 (2019).







To menu

Other journal publications by group members 2019 (26)

1. Targeted Therapy against Metastatic Melanoma Based on Self-Assembled Metal-Phenolic Nanocomplexes Comprised of Green Tea Catechin, K Li, G Xiao, JJ Richardson, BL **Tardy**, H Ejima, W Huang, J Guo, X Liao, Advanced Science 6 (5), 1801688 (2019)
2. Protein Adsorption and Coordination-Based End-Tethering of Functional Polymers on Metal–Phenolic Network Films, BL **Tardy**, JJ Richardson, V Nithipipat, K Kempe, J Guo, KL Cho, ...Biomacromolecules 20 (3), 1421-1428 (2019)
3. Porous Inorganic and Hybrid Systems for Drug Delivery: Future Promise in Combatting Drug Resistance and Translation to Botanical Applications, J Guo, BD **Mattos**, BL **Tardy**, VM Moody, G Xiao, H Ejima, J Cui, K Liang, ...Current medicinal chemistry (2019)
4. Tailored mesoporous biochar sorbents from pinecone biomass for the adsorption of natural organic matter from lake water, MR Yazdani, N Duimovich, A Tiraferri, P Laurell, M **Borghei**, ...,Journal of Molecular Liquids 291, 111248 (2019)
5. Dataset for natural organic matter treatment by tailored biochars, MR Yazdani, N Duimovich, A Tiraferri, P Laurell, M **Borghei**, ...Data in brief 25, 104353 (2019)
6. Alfa fiber: alkaline extraction together with structural and morphological characterization, K Labidi, M Zrida, O Korhonen, M **Borghei**, AH Hamzaoui, Cellulose Chemistry and Technology 52 (9-10), 701-709 (2019)
7. Slow delivery of biocide from nanostructured, microscaled, particles reduces its phytoxicity: A model investigation, BD **Mattos**, LR da Silva, IR de Souza, WLE Magalhães, DM Leme, Journal of hazardous materials 367, 513-519 (2019)
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11. Electrospun cellulose nanocrystals/poly(methyl methacrylate) composite nanofibers: Morphology, thermal and mechanical properties, Ni, X., Cheng, W., **Huan**, S., Wang, D. & Han, G., 15 Feb 2019, In : Carbohydrate Polymers. 206, 29-37 9 (2019)
12. Quantifying the interactions between biomimetic biomaterials – collagen I, collagen IV, laminin 521 and cellulose nanofibrils – by colloidal probe microscopy, **Nugroho**, R. W. N., Harjumäki, R., Zhang, X., Lou, Y. R., Yliperttula, M., Valle-Delgado, J. J. & Österberg, M., 1 Jan 2019, In : Colloids and Surfaces B: Biointerfaces. 173, 571-580 10 (2019)

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18. Katarina Dimic-Misic, Mirjana Kostić, Bratislav Obradović, Ana Kramar, Stevan Jovanović, Dimitrije Stepanenko, Marija Mitrović-Dankulov, Saša Lazović, Leena-Sisko **Johansson**, Thad Maloney, Patrick Gane: Nitrogen plasma surface treatment for improving polar ink adhesion on micro/nanofibrillated cellulose films. Cellulose 26(6) 3845-3857 (2019) DOI: 10.1007/s10570-019-02269-4
19. Hassan, G.; Forsman, N.; Wan, X.; Keurulainen, L.; Bimbo, L. M.; **Johansson**, L.-S.; Yli- Kauhaluoma, J.; Saris, P.; Österberg, M.; Moreira, V. M. Dehydroabietylamine-Based Cellulose Nanofibril Films: A New Class of Sustainable Biomaterials for Highly Efficient, Broad-Spectrum Antimicrobial Effects. ACS Applied Mat Interfaces (Oct 2018)ACS Sustainable Chemistry & Engineering7(5), p5002- 5009(2019)
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23. Alessandra Griffo; Yingying Liu; Riitta Mahlberg; Hanna-Leena Alakomi; Leena-Sisko **Johansson**; Roberto Milani: Design and testing of a bending-resistant transparent nanocoating for optoacoustic cochlear implants.ChemistryOpen 201 9, 8, 1100- 1108 (2019). DOI: 10.1002/open.201900172

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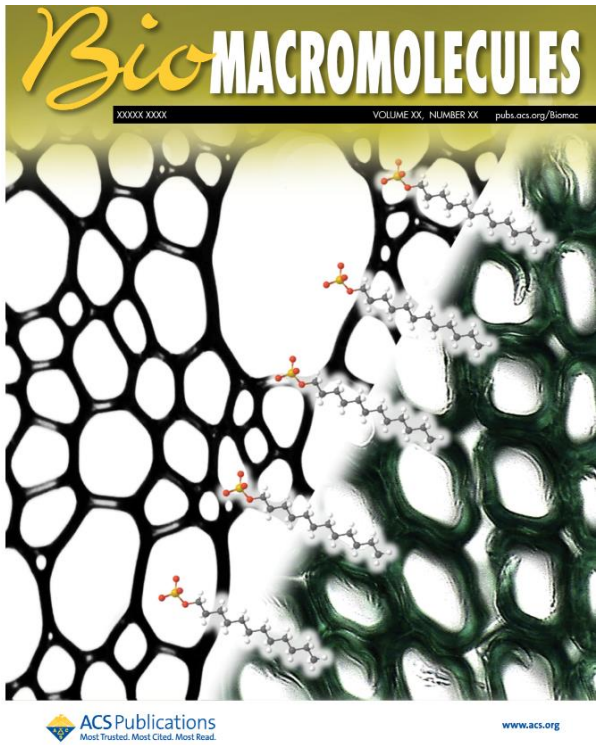
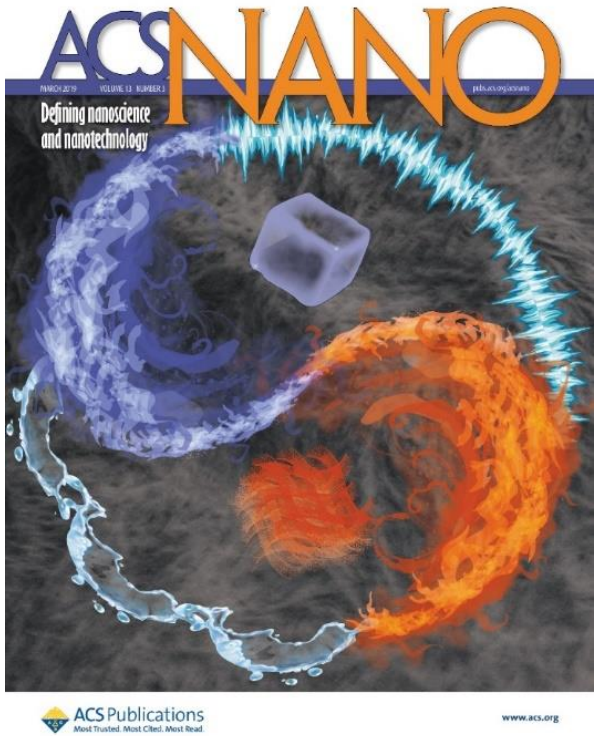
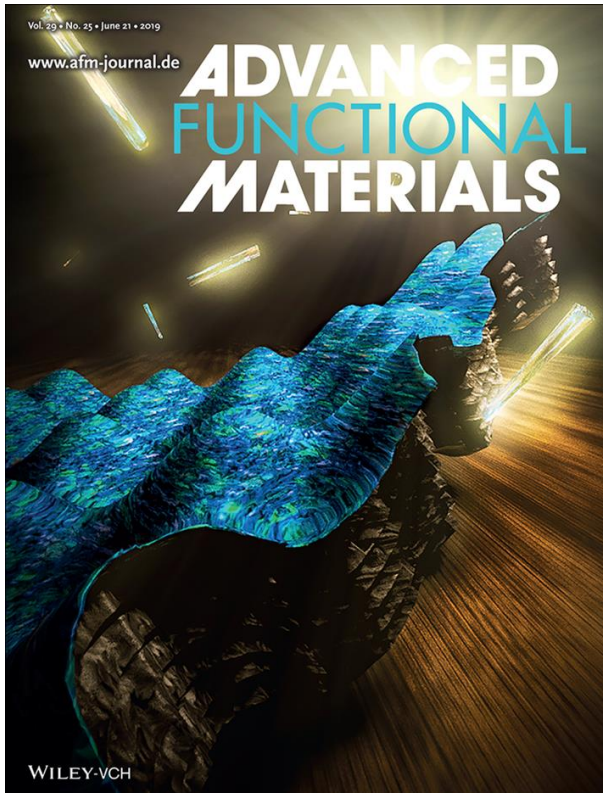
25. Nina Forsman, Leena-Sisko **Johansson**, Hanna Koivula, Matilda Tuure, Pirjo Kääriäinen and Monika Österberg: Scalable hydrophobization method for cellulose-based textiles based on non-toxic natural materials. ASS (May 2019), Open coating with natural wax particles enables scalable, non-toxic hydrophobation of cellulose-based textiles.Carbohydrate polymers(2019) DOI: 10.1016/j.carbpol.2019.115363
26. Diego Gomez-Maldonado, Iris Beatriz Vega Erramuspe, Ilari Filpponen, Leena-Sisko **Johansson**, Junyong Zhu, Alistair W.T. King, Wim Thielemans, Maria S. Peresin: Cellulose-Cyclodextrin co- polymer for removal of cyanotoxins on water sources.Polymers (Dec 2019).







To menu

members of the group visited Grenoble university hosted by Julien Bras

Visit to Embraopa, Brazil

EPNOE Plenary

Talk in UPFR, Curitiba, Brazil

Conferences, seminars and invited talks 2019 (95)

1. Rojas O.J. (**Invited Seminar**), Key Enabling Nanotechnologies for the Future Bioeconomy, Department of Chemical and Biological Engineering, **University of British Columbia**, Vancouver, Canada, February 15, 2019.
2. Rojas O.J. (**Invited Seminar**), Nanocelluloses: Trends and Opportunities, Fibrenamics International Workshop, **University of Minho**, Portugal, February 22, 2019
3. Rojas O.J. (**Invited Talk**) Lignin Valorization: From Particles in Supramolecular Assemblies to Functional Filaments, Growing the Bioeconomy: Bio-sourced Materials for High-Tech Applications, **BCTECHSummit 2019**, Vancouver, Canada, March 11, 2019.
4. Rojas O.J. (**Invited Seminar**) FinnCERES and Key Enabling Technologies for the future Bioeconomy, Biocomposites and Biomaterials Seminar, University of Oulu, Oulu, Finland, March 20, 2019.
5. Rojas O.J. (**Invited Seminar**), Assembly of nano-polysaccharides and plant polyaromatics at interfaces, **Melville Mini-Symposium Series**, Department of Chemistry, **University of Cambridge**, Cambridge, U.K., April 9, 2019
6. O.J. Rojas, **(Plenary talk)** Interfacial assembly and structuring of renewable nanoparticles for advanced materials, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
7. M. Toivonen, O. Onelli, O. Rojas, O.T. Ikkala, S. Vignolini, Light management with cellulose nanofibers, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
8. J. Guo, E. Filpponen, L. Johansson, M.B. Linder, R. Ras, P. Levkin, O. Rojas, Micropatterned nanocellulose films and magnetically responsive cellulose nanocrystals as platforms for microfluidic devices and selective protein separation, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
9. B.L. Tardy, B. Mattos, L. Garcia Greca, T. Kämäräinen, K. Klockars, O. Rojas (**Invited Talk**), Opto-mechanical properties of microtemplated chiral-nematic cellulose nanocrystals films, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
10. F.V. Ferreira, L.P. Souza, T.M. Martins, J.H. Lopes, T.M. Valverde, M. Mariano, I.F. Pinheiro, J. Camilli, A.M. Goes, O. Rojas, R.F. Gouveia, L.M. Lona, Nanocellulose foams containing bioglass: A three-dimensional scaffold for bone tissue engineering, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
11. B.C. Sulbaran, H. Palacios Hinestroza, J.A. Hernandez, M.A. Escalante, G. Toriz, O. Rojas, Nanocellulose from agroindustrial waste and its potential application in water and energy, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
12. K.A. Solin, H. Orelma, M. Borghei, M. Vuoriluoto, R. Koivunen, O. Rojas, Two-dimensional antifouling fluidic channels on cellulose nanopaper, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.

13. L. Wang, M. Ago, M. Borghei, A. Ishaq, A. Papageorgiou, O. Rojas, Highly conductive carbon microfibers following low temperature carbonization of wet-spun lignin/nanocellulose hydrogels, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
14. O. Cusola, S. Kivisto, S. Vierros, P. Batys, M. Ago, B.L. Tardy, L. Garcia Greca, M. Roncero, M. Sammalkorpi, O. Rojas, Stratification of lignin particles in waterborne systems via evaporation-induced self-assembly, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
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16. A. Ketola, T. Hjelt, T. Lappalainen, H. Pajari, T. Tammelin, J. Ketoja, W. Xiang, O. Rojas, Foam-fiber interaction in tailoring lightweight materials, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
17. T. Kämäräinen, M. Ago, J. Seitsonen, J. Raula, E. Kauppinen, J. Ruokolainen, O. Rojas, Harmonic analysis of surface instability patterns on colloidal lignin, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
18. M.J. Lundahl, R. Ajdary, M. Vuoriluoto, H. Orelma, V. Klar, A.G. Cunha, O.J. Rojas, Water interactions of man-made cellulose I filaments – threat or opportunity? **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
19. L. Garcia Greca, J. Lehtonen, B.L. Tardy, M. Rafiee, A. Karakoc, B. Mattos, O. Rojas, 3D bacterial cellulose biofabrication using superhydrophobized molds: Fundamentals and opportunities, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
20. B. Mattos, B.L. Tardy, L. Garcia Greca, W.E. Magalhães, O. Rojas, Versatile assembling of bio-based nanomaterials into functional superstructures, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
21. L. Bai, S. Huan, W. Xiang, R.W. Nugroho, O. Rojas, Self-assembled networks of short and long chitin nanoparticles for oil/water interfacial super-stabilization, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
22. J. Majoinen, L. Bai, W. Xiang, B.L. Tardy, O. Rojas, Phase separated chitin nanocrystal suspensions, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
23. W. Xiang, L. Bai, J. Majoinen, L. Liu, O. Rojas, Role of chitin nanocrystals in aqueous foam stabilization, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
24. M. Balakshin, E. Capanema, O. Rojas, Lignin engineering for high-value applications, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
25. E. Facchine, O. Rojas, S.A. Khan, Observations of phase separation in cellulose nanocrystals, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.

26. K.W. Klockars, B.L. Tardy, M. Borghei, A. Tripathi, L. Garcia Greca, O. Rojas, Development of domains and stratification in chiral nematic cellulose nanocrystal films, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
27. K. Klockars, N. Yau, B.L. Tardy, J. Majoinen, T. Kämäräinen, K. Miettunen, E. Boutonnet, J. Beidler, O. Rojas, Effect of drying flux inhomogeneities on the development of coffee rings from cellulose nanocrystals and visual designs perspective, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
28. R. Ajdary, N. Zanjanizadeh Ezazi, S. Huan, H. Santos, O. Rojas, Conductive 3D printed structures based on nanocellulose for electro-responsiveness and controlled drug release, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
29. L. Liu, L. Bai, Y. Fan, O. Rojas, Ultra-light and flexible nanochitin aerogel prepared from ice templating, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
30. L. Johansson, J. Campbell, H. Orelma, A. Shchukarev, O. Rojas, Peculiar XPS spectra on oxidized and carboxylated celluloses, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
31. T. Kämäräinen, M. Ago, L. Garcia Greca, B.L. Tardy, M. Müllner, L. Johansson, O. Rojas, Synthesis of polyphenol-based nano- and microparticles from tannic acid, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
32. S. Jin, R.J. Spontak, S. Khan, O. Rojas, Mesomorphic behavior of cellulose nanocrystal films prepared from different electrolyte solutions, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
33. E. Pasquier, J. Bras, O. Rojas, Hybrid films of cellulose nanofibers and lignin particles for advanced applications, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
34. R. Grande, L. Bai, L. Wang, W. Xiang, A.J. Carvalho, O. Rojas, Self-assembled filaments from deacetylated chitin nanofibers and sodium alginate obtained by interfacial complexation, **257th American Chemical Society, Spring National Meeting**, Orlando, FL, March 31-April 4, 2019.
35. Rojas O.J. (**Invited Lecture**), Bio-based nanostructures, characterization, bioapplications and imaging, Nanomedicines for Biomedical Applications Series, University of Helsinki, Helsinki, Finland, May 17, 2019.
36. Rojas O.J. (**Invited talk**) Science and Impact of HYBER and FinnCERES, HYBER-FinnCERES Symposium, Helsinki, Finland, May 15-17, 2019.
37. Rojas O.J. (**Invited Seminar**) Interfacial Assembly and structuring of renewable nanoparticles for advanced materials, LGP2 - Unité Mixte de Recherche Grenoble INP-CNRS, France, May 26, 2019
38. Rojas O.J. (**Plenary**) Lignocellulose nanomaterials and nanotechnologies: Keys to enable the biobased economy, **2nd International Workshop on Biorefinery of Lignocellulosic Materials** (IWBLCM2019), Cordoba, Spain, June 4-6, 2019

39. L. Wang, M. Borghei, P. Lahtinen, A. Papageorgiou, M. Lundahl, M. Ago, O.J. Rojas, (**Invited**) Conductive Carbon Microfibers Derived From Wet-Spun Lignin/Nanocellulose Hydrogels, **4th International Conference on Natural Fibers**, Porto, Portugal, July 1- 3,2019.
40. M. Beaumont, B. Tardy, A. Potthast, T. Rosenau, O.J. Rojas, Spherical cellulose ii core-shell nanoparticles decorated with carboxyl groups, **2nd International Workshop on Biorefinery of Lignocellulosic Materials** (IWBLCM2019), Cordoba, Spain, June 4-6, 2019
41. CG Otoni, O Rojas, W Loh, Routes for functionalizing nanostructured natural polysaccharides towards antimicrobial foams, **2nd International Workshop on Biorefinery of Lignocellulosic Materials** (IWBLCM2019), Cordoba, Spain, June 4-6, 2019
42. Rojas OJ., Kangas H., Siqueira G., (**Plenary**) Renewable nanomaterials developments in the Boreal Belt, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
43. Bai L., Rojas O.J., Cost-Effective and Functional Emulsions Stabilized with Renewable Particles, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
44. Mattos B., Rojas, O.J., Robust and Non-Hazardous Porous Constructs Enabled by Compositing Nanoparticles with Nanocelluloses, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
45. Bai, L., Rojas O.J., Fabrication of Edible Oil-in-Water Pickering Emulsions by Microfluidization Using Nanocellulose: Impact on In Vitro Digestion of Triglyceride, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
46. Bai, L., Rojas O.J., Cost-Effective and Functional Emulsions Stabilized with Renewable Particles, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
47. Tardy, B., Rojas O.J., Simple Framework for the Complete Morphological Characterization of CNFs to Enable Accurate Prediction of their Assembly Behavior, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
48. Ling, W., Rojas, O.J., Carbon Microfibers With High Conductivity Derived From Wet-Spun Lignin/Nanocellulose Hydrogels, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
49. Majoinen J., Rojas O.J., Unconventional CNC Derivatives, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
50. Ajdary R., Rojas O.J., Monocomponent Nanocellulose for Biobased 3D Printing, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.
51. Klockars K., Rojas O.J., Self-Assembly of CNCs Around Complex Contours, **International Conference on Nanotechnology for Renewable Materials**, Chiba, Japan, June 3-7, 2019.

52. Rojas O.J. (**Invited Lecture**) Nanocelluloses: Interactions and biosensors, **Surface Plasmon Resonance Workshop**, Tampere University, Finland, June 5-11, 2019
53. Rojas O.J. (**Keynote**) Adsorption and interfacial stabilization with nanochitin, nanoliginin and nanocelluloses (Track Particles & Molecules at Fluid Interfaces), **93rd ACS Colloid & Surface Science Symposium**, Atlanta, GA, June 16-19, 2019.
54. Rojas O.J. (**Invited Panelist**), Material Revolution, Finnish Consulate General in NYC, New York, United States, June 25, 2019.
55. Rojas O.J. (**Invited Talk and Panelist**), Material Revolution: bio-based solutions for the future, Finnish Embassy in the US, Washington DC, United States, June 27, 2019.
56. Rojas O.J. (**Invited Talk**) Hydrogels of Chiral–nematic Cellulose Nanocrystals and Nanochitin, **ECI Colloidal, Macromolecular & Biological Gels: Formulation, Properties & Applications**, Cork, Ireland, July 21–24 2019
57. Rojas O.J. (**Invited talk**) Introduction to use of bio-based materials for functional devices, **4th International Conference on Manipulation, Automation and Robotics at Small Scales, MARSS**, Helsinki, Finland, July 1-5, 2019.
58. Ketola A., Xiang W., Hjelt T., Lappalainen T., Pajari H., Tammelin T., Ketoja J.A., Rojas O.J., Revealing foam-fibre interactions in the production of lightweight materials: captive bubble study with model silica and cellulose surfaces, **Bubble & Drop Conference**, Sofia, Bulgaria, 24-28 June 2019
59. Tardy, B.L., Mattos B., Greca L.G., Klockars K., Kämäräinen T., Rojas O.J., Microarchitecturing of chiral-nematic films - expanding the opto-mechanical property spaces, **Elsevier International Conference on Multifunctional, Hybrid and Nanomaterials (HYMA),** Sitges, Spain, March 11-15, 2019
60. Blaise, T., Rojas O.J. **(Invited Talk)** Exploiting electrostatic and coordination interactions from bio-based polymers and colloids to direct nano- to macro-construction, **9th International Workshop on Polymer-Metal Nanocomposites**, Helsinki, Finland, July 22-24, 2019
61. Rojas O.J. (**Plenary talk**) Recent Developments in Advanced Materials from Nanopolysaccharides and Nanolignins, **International Symposium of Renewable and Sustainable Materials 2019**, Taipei, Taiwan, August 8-10, 2019
62. Rojas O.J. (**Invited talk**) Microfibers and Textile Materials from Dry- and Wet-Spinning of Structured Biopolymer Hydrogels, Th**e 2nd Conference on Nanomaterilas and Advanced Composites**, National Taiwan University of Science and Technology, Taipei, Taiwan, August 10-11, 2019
63. Bai L., Tardy B.L., Greca L., Mattos B., Klockars K., Xiang W., Imani M., Rojas O.J., Lignocellulosic nanofibrils and nanochitins: films and coatings, **Euromat 2019**, Stockholm, Sweden, September 1-5, 2019.
64. Greca L., Tardy B.L., Mattos B.,Rojas O.J., Sol-gel like process for novel functional, multiscale particulate coatings - Luiz G. Greca, Blaise L. Tardy, Bruno D. Mattos, Orlando J. Rojas**, Euromat 2019**, Stockholm, Sweden, September 1-5, 2019.
65. Otoni C., Silva D., Capeletti L., Cardoso M., Rojas O.J., Bernardes J., Loh W., Correlating surface characteristics with antibacterial efficiency of nanofibrillated cellulose foams, **Euromat 2019**, Stockholm, Sweden, September 1-5, 2019.

66. Jin S.A., Khan S., Rojas O.J., Spontak R., Elucidating the Mesomorphic Behavior of Cellulose Nanocrystal Films at Low Ionic Strength, **Euromat 2019**, Stockholm, Sweden, September 1-5, 2019.
67. Facchine E., Rojas O.J., Khan S., Critical concentration for self-assembly of biopolymer nanocrystals, **Euromat 2019**, Stockholm, Sweden, September 1-5, 2019.
68. Tardy B.L., Klockars K.W., Yau N., Tripathi A., Rojas O.J., Side-by-side tethering of the long-range order and the optical and mechanical properties of aerogels and films formed from cellulose nanocrystals, **Euromat 2019**, Stockholm, Sweden, September 1-5, 2019.
69. Rojas O.J. (**Invited Talk**) Assembly of nano-polysaccharides and plant polyaromatics at interfaces, **RISE Lignocellulosic Workshop**, Stockholm, Sweden, September 5, 2019.
70. Rojas O.J. (**Invited seminar**) The next material revolution will start in forest, Seminar, University of Santiago de Compostela, School of Physics, Santiago de Compostela, Spain, September 11, 2019.
71. Rojas O.J. (**Keynote speaker**) Back to the Future with the Forest, in BPI Researcher days, University of British Columbia, Vancouver, Canada, September 17, 2019
72. Rojas O.J. (**Invited Seminar**) BioColloids in the formulation of Multiphases, **O Boticário**, Curitiba, Brazil, September 19, 2019
73. Rojas O.J. (**Invited Seminar**) Assembly of nano-polysaccharides and plant polyaromatics at interfaces, **Universidade Federal do Paraná**, UPFR, Curitiba, Brazil, September 19, 2019
74. Rojas O.J. (**Invited Seminar**) Assembly of nano-polysaccharides and plant polyaromatics at interfaces, **EMBRAPA**, Curitiba, Brazil, September 20, 2019
75. Rojas O.J (**Key Note**) Assembly of nano-polysaccharides and plant polyaromatics at interfaces, **XVIII Brazil MRS meeting**, Balneario Camboriu, Brazil, September 22-27, 2019.
76. Mattos B.D., Greca L.G., Tardy B.L., Rojas O.J., Hybrid supraparticles with highly localized functional domains enabled by cellulose nanofibrils, **XVIII Brazil MRS meeting**, Balneario Camboriu, Brazil, September 22-27, 2019.
77. Berto G.L., Mattos B.D., Rojas O.J.,, Arantes V., Systematic investigation of the defibrillation of cellulose fibers into nanofibrils assisted by single-step enzymatic treatment, **XVIII Brazil MRS meeting**, Balneario Camboriu, Brazil, September 22-27, 2019.
78. Tardy B.L., Tripathi A;, Mattos B., Greca L., Klockars K., Kämäräinen T., Rojas O.J., Transitions from liquid crystalline suspensions of cellulose nanocrystals to multi-scaled, hierarchically-structured films and aerogels, **XVIII Brazil MRS meeting**, Balneario Camboriu, Brazil, September 22-27, 2019.
79. Otoni C., Silva D., Cardoso M., Bernardes J., Rojas O.J., Loh W., Antimicrobial aerogels based on natural polysaccharides, **XVIII Brazil MRS meeting**, Balneario Camboriu, Brazil, September 22-27, 2019.
80. Greca L.G., Lehtonen J., Tardy B.L., Mattos B.D., Rafiee M., Karakoc A., Rojas O.J., From bioinspiration to biofabrication: superhydrophobic surfaces for the production of nanocellulose-based 3D biofilms, **XVIII Brazil MRS meeting**, Balneario Camboriu, Brazil, September 22-27, 2019.
81. Grande R., Bai L., Wang L., Xiang W., Ikkala O., Carvalho, A.J.F., Rojas O.J., Filaments from chitin nanofibers and alginate obtained by interfacial complexation, **XVIII Brazil MRS meeting**, Balneario Camboriu, Brazil, September 22-27, 2019.

82. Rojas O.J. (**Keynote lecture**) 3D-structured Cellulose Biofilms and Applications, **4th International Sympoiusm on Bacterial Nanocellulose**, Porto, Portugal, October 3-4, 2019.
83. Rojas O.J. (**Keynote seminar**) Assembly of nano-polysaccharides and plant polyaromatics at interfaces, Chemistry and Engineering of Formulation, **UCCS-ENSCL-University Lille,** Lille, France, October 11, 2019
84. Rojas O.J. (**Keynote lecture**) Development of Advanced Lignocellulosic Bioproducts. Colloidal behavior, phase transitions and applications, **Master CIF (Chemistry and Engineering of Formulation)**, National School of Chemistry, University Lille, Lille, October 10, 2019
85. Rojas O.J. (**Plenary Lecture**) Cellulose nanocrystals: chemistry, self-assembly and applications, **6th International Polysaccharide Conference,** The European Polysaccharide Network of Excellence (EPNOE), Aveiro, Portugal, 21st– 25th October 2019
86. Rojas, O.J. (**Invited talk**) Assembly of nano-polysaccharides and plant polyaromatics at interfaces, **SCUT Forum on Biomass Materials, Biorefineries and Pulp and Papermaking**, Guangzhou, China, November 4, 2019
87. Rojas, O.J. (**Invited Seminar**), Nanjing Forestry University, Nanjing, China, November 6, 2019.
88. Rojas, O.J. (**Invited Seminar**) Dalian Polytech University, Dalian, China, November 11, 2019
89. Rojas, O.J. (**Invited Seminar**) College of Food Science, Huazhong Agricultural University, November 13, 2019.
90. Rojas, O.J. (**Invited Seminar**) Wuhan University, November 13, 2019
91. Rojas, O.J. (**Invited Seminar**) Dept. Biomedical Engineering, Huangzhou Univ Science and Technol, November 15, 2019.
92. Rojas, O.J. (**Invited talk**) Co-continuous systems from cellulose and its derivatives, **All-cellulose composites Workshop**, Aalto University, Espoo, Finland, November 21, 2019
93. Lourencon T.V., Greca L.G., Borrega M., Tamminen T., Rojas O.J., Balakshin M., Lignin-First Integrated Biorefinery via Hydrothermal Treatment (HTT) of Biomass: A New Angle of a Known Process, The 20th International Symposium on Wood, Fiber, and Pulping Chemistry, Tokyo, Japan, September 9- 11, 2019.
94. Blaise, T., Deakin University, "Assembly of bio-colloids as a strategy to form high performance and sustainable materials“, December 2019.
95. Blaise, T., The University of Melbourne, "Assembly of bio-colloids as a strategy to form high performance and sustainable materials“, December 2019.

- Organizer, Polysaccharides in the formulation of multiphase systems, 6th International Polysaccharide Conference, the European Polysaccharide Network of Excellence (EPNOE) , Aveiro, Portugal, 21st– 25th October 2019
- International Symposium of Renewable and Sustainable Materials 2019, National Taiwan University of Science and Technology, Taipei, Taiwan, August 8-10, 2019 , [Advisory Committee]:
- Scientific Committee, 1st International Symposium on Nanocellulosic Materials, Tianjin, China, may 16-17, 2019

To menu

BiCMat highlight of 2019 (I): Bioeconomy trip in the US with Aalto leadership

Aalto and Bioconomy activities in the US

- **PVH Corp-TUG**, Maria Gadosky (Sr. Director, Raw Materials & Packaging) and Senthil Lingamoorthy (Director, Raw Materials-Advanced Concepts),, June 24, 2019
- **The New School**, CDO Mark Gibbel, June 24, 2019
- **Council of Fashion Designers of America** (CFDA), Sara Kozlowski, Director of Education + Professional Development, June 25, 2019
- **Panel at NYC Consulate General**: Event Material revolution
- **American Chemistry Council**: Anne Kolton, Executive Vice President, Communications, Sustainability & Market Outreach; Kathryn StJohn, Senior Director; Bryan Kuppe, Director, Sustainability; Keith Christman, Managing Director; Steven K. Russell, VP ACC's Plastics Dept; Patrick Hurston, Economics Communications, June 26, 2019
- **The Ocean Foundation**, Kate Killerlain Morrison, Strategic Partnerships Director, June 27, 2019.
- **Plastics Industry Trade Association**, Patrick Krieger, Director Regulatory & Technical Affairs, June 27, 2019.
- **Material Revolution**: bio-based solutions for the future, Evening event at the Embassy, Washington DC, June27, 2019

Above: Panel at NYC Consulate General: Janne Laine (VP Innovation-Aalto), O Rojas; Kay Makishi (founder of the https://makishiapparel.com/), Representative of Eileen Fisher, Loren Nadres, Director of Economic Development from NYC Mayor's Office for International Affairs and Ilkka Niemelä (President, Aalto).

Link

To menu

BiCMat highlight of 2019 (II): Exchanges with China

South China University of Technology, Nanjing Forestry University, Wuhan University, Dalian Polytech, Huazhong Agricultural University, Huazhong University of Science and Technology








O. Rojas appointed Distinguished Professor (NJFU), Visiting Professor (Dalian) and Guest Professor (SCUT), 2019

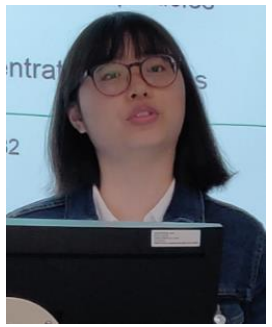
To menu

BiCMat highlight of 2019 (III): Exercise activities

Halloween party 2019


Mtg with UPM


Hte Band



To menu

2020

Core members

Long Bai,
PDR
01/10/20-

Label-friendly emulsions for food, personal care and cosmetics, nanochitin.
Link GS

Huan Siqi,
PDR
01/10/20-

3D printing with nanocellulose hydrogels, electrospinning, emulsions and composites.
Link GS

Niu Xun,
PhD student
03/01/20

Cellulose-based multi-functional materials, ILs, plasticized films, BC.

Xuetong Shi,
PhD student
03/01/20

Phase-changing materials, thermal insulation.

Visiting PhD students

Shasha Guo,
SCUT,
03/20-12/21

Pickering emulsions based cellulose and lignin nanomaterials.

Tianyu Guo,
NJFU
02/20-02/21

Design of bioinspired nanocellulose-based materials with self-healing performance. Cellulose–dopamine/mineral hybrids

Junhua Xu,
NJFU
02/20-02/21

In-situ co-precipitation of layered HAP in chitin nanofibril hydrogels

Ming He,
QLU
05/20-05/21

Preparation and application of nanocelluloses, Deep Eutectic Solvent, papermaking

Visiting Faculty

Tingting Xu,
NJFU
02/20-04/21

Biomaterials, Synthesis, Self- & Direct Assembly of Biobased Colloidal Systems for Food Pathogen Detection.

Yanxia Zhang,
Soochow Univ
03/20-09/20

Biomaterials, Bioactive surfaces, scaffolds, bacterial cellulose.

Planned exchanges (Aalto-UBC): Katariina Solin, Rubina Ajdary and others

To menu