

### Peer Reviewed Articles (49 Published, 6 in revision)

50. Jessica K. Nguyen, Mehdi Jorfi, Kelly L. Buchanan, Daniel J. Park, E. Johan Foster, Dustin J. Tyler, Stuart J. Rowan, Christoph Weder, and Jeffrey R. Capadona\*. Influence of resveratrol release on the tissue response to mechanically adaptive cortical implants. *Acta Biomaterialia*. **2015** *Accepted with minor revisions*
49. Sandra Camarero-Espinosa, Barbara Rothen-Rutishauser, Christoph Weder and E. Johan Foster\* Directed cell growth in multi-zonal scaffolds for cartilage tissue engineering. *Biomaterials*. **2016**, pp. 42-52. DOI: 10.1016/j.biomaterials.2015.09.033
48. Tobias Kuhnt, Andreas Herrmann, E. Johan Foster and Christoph Weder Controlled fragrance release from a cellulose nanocrystal scaffold. *Polymer Chemistry*, **2015**, 6, 6553 - 6562. DOI: 10.1039/c5py00944h
47. Apiradee Nicharat, Janak Sapkota, Christoph Weder\* and E. Johan Foster\* Melt-Processing of Nanocomposites of Polyamide 12 and Cellulose Nanocrystals. *Journal of Applied Polymer Science*. **2015**. 132, 42752 (10 pages) DOI: 10.1002/app.42752
46. Chelsea S. Davis, Robert J. Moon, Sean Ireland, E. Johan Foster, Linda Johnston, Jo Anne Shatkin, Kim Nelson, Aaron M. Forster, Michael T. Postek, András E. Vladár, Jeffrey W. Gilman. Report: NIST-TAPPI Workshop on Measurement Needs for Cellulose Nanomaterials. *National Institute of Standards and Technology Special Publication*. **2015**. 1192 (42 Pages). DOI: 10.6028/NIST.SP.1192
45. Águeda Sonseca, Oscar Sahuquillo, E. Johan Foster and Enrique Giménez. Mechanical Properties and degradation studies of Poly(Mannitol-Sebacate)/Cellulose Nanocrystal Nanocomposites. *RSC Advances*. **2015**, 5, pp 55879-55891. DOI: 10.1039/C5RA06768E
44. Carola Endes, Silvana Mueller, Calum Kinnear, Dimitri Vanhecke, E. Johan Foster, Alke Petri-Fink Christoph Weder, Martin J.D. Clift, Barbara Rothen-Rutishauser Fate of cellulose nanocrystal aerosols deposited on the lung cell surface *in vitro*. *Biomacromolecules*. **2015**, 16 (4), pp 1267–1275. DOI: 10.1021/acs.biomac.5b00055
43. Lucas Montero de Espinosa, Gina L. Fiore, Christoph Weder, E. Johan Foster, and Yoan C. Simon\* Healable Supramolecular Polymer Solids. *Progress in Polymer Science*. **2015** *In Press*. doi:10.1016/j.progpolymsci.2015.04.003 (*Invited Review*)
42. Janak Sapkota, Sandeep Kumar, Christoph Weder\* and E. Johan Foster\* Influence of Processing Conditions on Properties of Poly (Vinyl acetate)/Cellulose Nanocrystal Nanocomposites. *Macromolecular Materials and Engineering*. **2015**, 300 (5) pp 562-571. DOI: 10.1002/mame.201400313 (*Journal's top 10 most accessed paper for Feb-April 2015*)
41. Mehdi Jorfi and E. Johan Foster\*. Recent Advances in Cellulose-Based Biomaterials for Biomedical Applications. *Journal of Applied Polymer Science*. **2015** 132(14) 41719 (19 p) DOI: 10.1002/app.41719 (*Cover Article, Invited Review, Featured in Materials Views Feb 27, 2015*)

40. Silvana Mueller, Janak Sapkota, Apiradee Nicharat, Christoph Weder\* and E. Johan Foster\* Poly(Vinyl Alcohol) Aerogels Containing Differing Aspect Ratio Nanocelluloses: a Comparative Study. *Journal of Applied Polymer Science*. **2015**. 132(13) 41740 (13 p) DOI: 10.1002/app.41740.
39. Sandra Camarero Espinosa; Dylan J. Boday; Christoph Weder and E. Johan Foster\* Cellulose Nanocrystal Driven Crystallization of Amorphous Poly (D,L)-Lactic Acid and Improvement the Mechanical Properties. *Journal of Applied Polymer Science*, **2015**, 132, 41607-41618 DOI: 10.1002/app.41607
38. Tobias Kuhnt, Daniel Benczedi, Andreas Herrmann, Christoph Weder and E. Johan Foster\* Controlled fragrance release from a sugar molecule scaffold. *RSC Advances*. **2014**, 4 (92), 50882 – 50890. DOI: 10.1039/C4RA07728H
37. Davide Bandera, Janak Sapkota, Sébastien Josset, Christoph Weder, Philippe Tingaut, Xin Gao, E. Johan Foster,\* Tanja Zimmermann\* Influence of mechanical treatments on the properties of cellulose nanofibers isolated from microcrystalline cellulose. *Reactive and Functional Polymers*. **2014**, 85, 134-141. *Invited Article*. DOI: 10.1016/j.reactfunctpolym.2014.09.009
36. Silvana Mueller, Christoph Weder and E. Johan Foster\* Water-insoluble Aerogels Made from Cellulose Nanocrystals and Poly (Vinyl Alcohol). *Green Materials*. **2014**, 2(4) pp 169-182. *Special Issue Invited Article*. DOI: 10.1680/gmat.14.00012
35. Soo-Hyon Lee, Águeda Sonseca, Roberto Vadrucchi, Enrique Giménez, E. Johan Foster, and Yoan C. Simon\* Low-Power Upconversion in Poly(Mannitol-Sebacate) Networks with Tethered Diphenylanthracene and Palladium Porphyrin. *Journal of Inorganic and Organometallic Polymers and Materials*. **2014**, 24(5), pp 898-90. DOI: 10.1007/s10904-014-0063-7
34. Janak Sapkota, Mehdi Jorfi, Christoph Weder\* and E. Johan Foster\* Reinforcing Hydrophobic Polymer Nanocomposites with Cellulose Nanocrystals. *Macromolecular Rapid Communications* **2014**, 35 (20), 1747-1753. DOI: 10.1002/marc.201400382 ([Journal's top 15 most accessed articles for 09/2014](#))
33. Águeda Sonseca, Sandra Camarero, Laura Peponi, Christoph Weder, E. Johan Foster, José M. Kenny and Enrique Giménez\* Mechanical and shape-memory properties of poly(mannitol sebacate) / cellulose nanocrystal nanocomposites. *Journal of Polymer Science Part a-Polymer Chemistry* **2014**. 52(21), pp 3123-3133. DOI: 10.1002/pola.27367
32. Bastien Schyrr, Stéphanie Pasche, Guy Voirin, Christoph Weder Yoan C. Simon\*, E. Johan Foster\* Biosensors based on porous cellulose nanocrystal – poly(vinyl alcohol) as scaffolds. *ACS Applied Materials & Interfaces*, **2014**, 6 (15), pp 12674–12683. DOI: 10.1021/am502670u
31. Mahesh V. Biyani, Christoph Weder and E. Johan Foster\* Photoswitchable Nanocomposites with Coumarin Functionalized Cellulose Nanocrystals. *Polymer Chemistry*. **2014**, 5, 5501-5508 DOI: 10.1039/C4PY00486H. *Selected as a "2014 Polymer Chemistry Papers of the week"*

30. Mahesh V. Biyani, Mehdi Jorfi, Christoph Weder and E. Johan Foster\* Light-stimulated mechanically switchable, photopatternable cellulose nanocomposites. *Polymer Chemistry*. **2014**, *5*, 5716-5724. DOI: 10.1039/C4PY00487F
29. Carola Endes, Otmar Schmit, Calum Kinnear, Silvana Müller, Sandra Camarero Espinosa, Dimitri Vanhecke, E. Johan Foster, Alke Petri-Fink, Barbara Rothen- Rutishauser, Christoph Weder and Martin J.D. Clift. A systematic in vitro approach towards mimicking the inhalation of high aspect ratio nanoparticles. *Particle and Fibre Toxicology*. **2014**, *11*:40. DOI: 10.1186/s12989-014-0040-x
28. Mehdi Jorfi, Guy Voirin, E. Johan Foster and Christoph Weder \* Physiologically Responsive Mechanically Adaptive Polymer Optical Fibers for Optogenetics. *Optic Letters* **2014**. 39(10), 2872 – 2875. DOI: 10.1364/OL.39.002872. *Editor selected for feature in the Virtual Journal for Biomedical Optics (VJBO)*
27. Iulia A. Sacui, Ryan C. Nieuwendaal, Henryk Szmazinski, Daniel J. Burnett, Stephen J. Stranick, Mehdi Jorfi, Christoph Weder, E. Johan Foster, Richard T. Olsson, and Jeffery W. Gilman; Comparison of the properties of cellulose nanocrystals and cellulose nanofibrils isolated from bacteria, tunicate, and wood processed using acid, enzymatic, mechanical, and oxidative methods. *ACS Applied Materials & Interfaces*, **2014**, *6* (9), pp 6127–6138 DOI: 10.1021/am500359f
26. Pratheep K. Annamalai, Koffi L. Dagnon, E. Johan Foster, Stuart J. Rowan, and Christoph Weder, Water-Responsive Mechanically Adaptive Nanocomposites based on Styrene-Butadiene and Cellulose Nanocrystals – Processing Matters. *ACS Applied Materials & Interfaces* **2014**. *6* (2), pp 967–976 DOI: 10.1021/am404382x
25. Souleymane Coulibaly, Anita Roulin, Sandor Balog, Mahesh Biyani, E. Johan Foster, Stuart J. Rowan, Gina L. Fiore and Christoph Weder. Reinforcement of optically healable supramolecular polymers with cellulose nanocrystals. *Macromolecules*. **2014**. *47* (1), pp 152–160 DOI: 10.1021/ma402143c
24. Kelsey A. Potter, Mehdi Jorfi, Kyle T. Householder, E. Johan Foster, Christoph Weder, Jeffrey R. Capadona. Curcumin-releasing mechanically-adaptive intracortical implants improve the proximal neuronal density and blood-brain barrier stability. *Acta Biomaterialia*. **2014**. *10* (5) pp 2209–2222. DOI: 10.1016/j.actbio.2014.01.018
23. Ainara Saralegi, E. Johan Foster, Christoph Weder, Arantxa Eceiza, Maria Corcuera. Thermoplastic shape-memory polyurethanes based on natural oils. *Smart Materials and Structures* **2014** (23) 025033. DOI: 10.1088/0964-1726/23/2/025033
22. Silvana Mueller; Christoph Weder and E. Johan Foster\* Isolation of Cellulose Nanocrystals from Pseudostems of Banana Plants. *RSC Advances*. **2014**, *4* (2): 907–915. DOI: 10.1039/C3RA46390G
21. Ainara Saralegi, Susana Fernandes, Ana Alonso-Varona, Teodoro Palomares, E. Johan Foster, Christoph Weder, Arantxa Eceiza, Maria Corcuera. Shape-Memory Bionanocomposites Based on Chitin Nanocrystals and Thermoplastic Polyurethane with a

- Highly Crystalline Soft Segment. *Biomacromolecules*. **2013**. 14(12):4475-82 DOI: 10.1021/bm401385c
20. Jennifer S. Haghpanah, Raymond Tu, Sandra Da Silva, Deng Yan, Silvana Mueller, Christoph Weder, E. Johan Foster, Iulia Sacui, Jeffery W. Gilman and Jin Kim Montclare, Bionanocomposites: Differential Effects of Cellulose Nanocrystals on Protein Diblock Copolymers. *Biomacromolecules* **2013**. ASAP DOI:10.1021/bm401304w
  19. Carola Endes; Silvana Mueller; Otmar Schmid; Dimitri Vanhecke; E. Johan Foster; Alke Petri-Fink; Barbara Rothen-Rutishauser; Christoph Weder and Martin J. D. Clift, Risk assessment of released cellulose nanocrystals – mimicking inhalatory exposure *Journal of Physics: Conference Series* **2013**, 429, 012008. DOI:10.1088/1742-6596/429/1/012008
  18. Sandra Camarero Espinosa; Tobias Kuhnt; E. Johan Foster\* and Christoph Weder\* Isolation of thermally stable cellulose nanocrystals by phosphoric acid hydrolysis. *Biomacromolecules*. **2013**. 14(4):1223-30 DOI: 10.1021/bm400219u
  17. Mahesh V. Biyani, E. Johan Foster\* and Christoph Weder\* Light-Healable Supramolecular Nanocomposites Based on Modified Cellulose Nanocrystals. *ACS Macro Letters* **2013** 2(3) pp 236–240 DOI: 10.1021/mz400059w
  16. Mehdi Jorfi; Matthew N. Roberts; E. Johan Foster\* and Christoph Weder\* Mechanically-Adaptive Bio-Nanocomposites for Biomedical Applications. *ACS Applied Materials & Interfaces* **2013** 5 (4) pp 1517–1526. DOI: 10.1021/am303160j
  15. Sandeep Kumar; Manfred Hofmann; Bettina Steinmann; E. Johan Foster; Christoph Weder, Reinforcement of Stereolithographic Resins for Rapid Prototyping with Cellulose Nanocrystals. *ACS Applied Materials & Interfaces* **2012**, 4, (10), 5399-5407. DOI: 10.1021/am301321v
  14. Julie Mendez; Pratheep K. Annamalai; Stephen J. Eichhorn; Rafeadah Rusli; Stuart J. Rowan; E. Johan Foster\* and Christoph Weder\*, Bioinspired Mechanically Adaptive Polymer Nanocomposites with Water-Activated Shape-Memory Effect. *Macromolecules* **2011**, 44, (17), 6827-6835. DOI: 10.1021/ma201502k
  13. Martin J. D. Clift; E. Johan Foster; Dimitri Vanhecke; Daniel Studer; Peter Wick; Peter Gehr; Barbara Rothen-Rutishauser; Christoph Weder, Investigating the Interaction of Cellulose Nanofibers Derived from Cotton with a Sophisticated 3D Human Lung Cell Coculture. *Biomacromolecules* **2011**, 12, (10), 3666-3673. DOI: 10.1021/bm200865j
  12. Sutheerat Changsarn; James D. Mendez; Kadhivaran Shanmuganathan; E. Johan Foster; Christoph Weder and Pitt Supaphol, Biologically Inspired Hierarchical Design of Nanocomposites Based on Poly(ethylene oxide) and Cellulose Nanofibers. *Macromolecular Rapid Communications* **2011**, 32, (17), 1367-1372. DOI: 10.1002/marc.201100183
  11. E. Johan Foster; Erik B. Berda; Egbert W. Meijer, Tuning the Size of Supramolecular Single-Chain Polymer Nanoparticles. *Journal of Polymer Science Part a-Polymer Chemistry* **2011**, 49, (1), 118-126. DOI: 10.1002/pola.24426 ([Cover Article](#))

10. Erik B. Berda; E. Johan Foster and Egbert W. Meijer, Toward Controlling Folding in Synthetic Polymers: Fabricating and Characterizing Supramolecular Single-Chain Nanoparticles. *Macromolecules* **2010**, 43, (3), 1430-1437. DOI: 10.1021/ma902393h
9. Emilie Voisin; E. Johan Foster; Muriel Rakotomalala and Vance E. Williams, Effects of Symmetry on the Stability of Columnar Liquid Crystals. *Chemistry of Materials* **2009**, 21, (14), 3251-3261. DOI: 10.1021/cm9012443
8. E. Johan Foster; Erik B. Berda and Egbert W. Meijer, Metastable Supramolecular Polymer Nanoparticles via Intramolecular Collapse of Single Polymer Chains. *Journal of the American Chemical Society* **2009**, 131, (20), 6964. DOI: 10.1021/ja901687d (Cover Article)
7. Christine Lavigueur; E. Johan Foster and Vance E. Williams, A simple and inexpensive capillary furnace for variable-temperature X-ray diffraction. *Journal of Applied Crystallography* **2008**, 41, 214-216. DOI:10.1107/S0021889807057251
6. Christine Lavigueur; E. Johan Foster and Vance E. Williams, Self-assembly of discotic mesogens in solution and in liquid crystalline phases: Effects of substituent position and hydrogen bonding. *Journal of the American Chemical Society* **2008**, 130, (35), 11791-11800. DOI: 10.1021/ja803406k
5. Christine Lavigueur; E. Johan Foster and Vance E. Williams, Modular assembly of elliptical mesogens. *Liquid Crystals* **2007**, 34, (7), 833-840. DOI: 10.1080/02678290701407243
4. E. Johan Foster; R. Brad Jones; Christine Lavigueur and Vance E. Williams Structural factors controlling the self-assembly of columnar liquid crystals. *Journal of the American Chemical Society* **2006**, 128, (26), 8569-8574. DOI: 10.1021/ja0613198
3. E. Johan Foster; Christine Lavigueur; Ying-Chieh Ke and Vance E. Williams, Self-assembly of hydrogen-bonded molecules: discotic and elliptical mesogens. *Journal of Materials Chemistry* **2005**, 15, (37), 4062-4068. DOI: 10.1039/B503310A
2. E. Johan Foster; Jarret Babuin; Natalie Nguyen and Vance E. Williams Synthesis of unsymmetrical dibenzoquinoxaline discotic mesogens. *Chemical Communications* **2004**, (18), 2052-2053. DOI: 10.1039/B400998C
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### Patents

- P3 Christoph Weder; E. Johan Foster; Mehdi Jorfi; Physiologically Responsive Mechanically Adaptive Polymer Optical Fibers, Production and Methods of Use. Filed United States Provisional Patent (Feb **2014**)
- P2. Christoph Weder; E. Johan Foster; Mehdi Jorfi; Matthew N. Roberts, Polymer nanocomposite having switchable mechanical properties. European Patent Application Filed **2012**. Patent/Application Number 61/700,995

- P1. Christoph Weder; E. Johan Foster; Mehdi Jorfi; Matthew N. Roberts; Barbara Breuer-Thal; Ruediger Witt, Medical injection device. European Patent Application Filed **2012**. Patent/Application Number 61/701,000

### Book Contributions

- B3. Janak Sapkota; Matthew N. Roberts; Christoph Weder and E. Johan Foster\*, Melt Processing of PVAc-Cellulose Nanocrystal Nanocomposites. In: Production and Applications of Cellulose Nanomaterials; Postek, M.T.; Moon, R.; Bilodeau, M.; Rudie, A.; Eds.; TAPPI Press. ISBN: 978-1-59510-224-9 **2013**. Pg 111
- B2. Mahesh V. Biyani; Mehdi Jorfi; Christoph Weder and E. Johan Foster\*, Light-Responsive Cellulose-based Materials. In: Production and Applications of Cellulose Nanomaterials; Postek, M.T.; Moon, R.; Bilodeau, M.; Rudie, A.; Eds.; TAPPI Press. ISBN: 978-1-59510-224-9 **2013**. Pg 129
- B1. Sandra Camarero; Tobias Kuhnt; Christoph Weder and E. Johan Foster\*, Thermally Stable Cellulose Nanocrystals Isolated By Phosphoric Acid Hydrolysis. In: Production and Applications of Cellulose Nanomaterials; Postek, M.T.; Moon, R.; Bilodeau, M.; Rudie, A.; Eds.; TAPPI Press. ISBN: 978-1-59510-224-9 **2013**.Pg 17

### Conference Proceedings

- C7. Umesh P. Agarwal, Richard S. Reiner, Christopher G. Hunt, Jeffery Catchmark, E. Johan Foster, Akira Isogai. "Comparison of Cellulose Supramolecular Structures Between Nanocrystals of Different Origins" 18<sup>th</sup> International Symposium on Wood, Fibre and Pulp Chemistry, **2015**, Austria
- C6. Jennifer S. Haghpanah, Raymond Tu, Sandra DaSilva, Jeffrey W. Gilman, E. Johan Foster, Christoph Weder, Jin Kim Montclare "Bionanocomposites: Differential effects of tunicate cellulose whiskers on protein block polymers" *ACS PMSE*. **2012** 243
- C5. Mahesh Biyani, E. Johan Foster and Christoph Weder "Polymer nanocomposites with cellulose nanocrystals" *ACS PMSE*. **2012** 243
- C4. Sandeep Kumar, Mehdi Jorfi, E. Johan Foster and Christoph Weder "Polymer nanocomposites with cellulose nanocrystals" *ACS POLY-634*. **2011** 242
- C3. Erik B. Berda, E. Johan Foster and Egbert W. Meijer "Learning to fold synthetic polymer chains: Supramolecular single-chain nanoparticles" *ACS PMSE-407*. **2010** 239
- C2. Erik B. Berda, E. Johan Foster and Egbert W. Meijer "Supramolecular single chain nanoparticles: Toward perfectly folded synthetic polymer chains" *ACS POLY-396*. **2009** 238
- C1. E. Johan Foster and E. W. (Bert) Meijer "Poly(ureido-pyrimidinone-norbornene) based nanoparticles" *ACS PMSE-360*. **2008** 236