



Functional micropatterned nanocellulose materials: exploring size, composition, resolution and applications

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At the Melbourne Centre for Nanofabrication Boardroom
151 Wellington Road, Clayton, 3168

Zoom link: [click here](#)

Meeting ID: 853 0791 2456 and **passcode:** 698126



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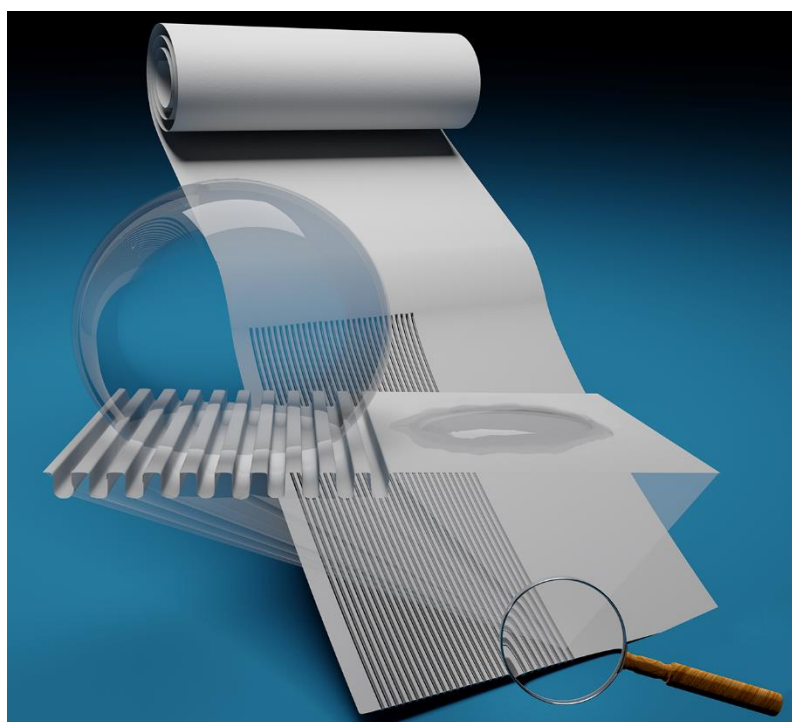
W: <https://www.monash.edu/engineering/hpfmresearch>



Abstract:

With the increasing interest, awareness and desire for change, consumers are leading the drive to create products with a lower impact on the natural environment along with being sustainable, recyclable and reusable. Cellulose, the world's most abundant naturally occurring polymer, is a prime candidate to meet these needs due to it being renewable, recyclable and environmentally friendly. These properties lead cellulose to be highly useful in areas of paper-based diagnostic or fluid handling devices. Traditionally, these devices have been fabricated with techniques such as laser cutting, wax printing or microembossing which have the downfall of lower resolution feature sizes.

We have combined fabricating moulds at MCN with a spray coating process to create micropatterned nanocellulose films. We have modified the size of the cellulose components and suspension composition to achieve minimum feature sizes an order to two orders of magnitude smaller than the traditional techniques for paper-based systems. We will also demonstrate applications for these materials in areas such as fluid handling and controlling paper wettability.



Dr Christine Browne is a Research Fellow at the Bioresource Processing Research Institute of Australia (BioPRIA) in the Department of Chemical and Biological Engineering at Monash University. She completed her PhD at The University of Melbourne in 2016 and then completed a Post-Doctoral role at the Université Grenoble Alpes, France in collaboration with BASF, Germany. She joined BioPRIA in 2018 and is currently developing various materials and products from cellulose-based sources. She is interested in the interactions and properties of cellulose nanocrystals and nanofibers and how these materials can be exploited to create high value, sustainable products.