

Cellulose based aerogel microfibers for biomedical applications

Citation for published version (APA):

Rostamitabar, M. (2022). *Cellulose based aerogel microfibers for biomedical applications*. [Doctoral Thesis, Maastricht University, RWTH Aachen University]. Maastricht University.
<https://doi.org/10.26481/dis.20221214mr>

Document status and date:

Published: 01/01/2022

DOI:

[10.26481/dis.20221214mr](https://doi.org/10.26481/dis.20221214mr)

Document Version:

Publisher's PDF, also known as Version of record

Please check the document version of this publication:

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PROPOSITIONS

Belonging to the PhD dissertation

“Cellulose Based Aerogel Microfibers for Biomedical Applications”

BY MATIN ROSTAMITABAR

- 1) Cellulose, the most abundant natural polymer, is renewable, biocompatible and biodegradable material which has been used in biomedical applications such as drug delivery and wound dressing.

PhD thesis

- 2) Cellulose aerogels are favorable wound dressing materials thanks to aerogel's low density, high porosity, large specific surface area and cellulose intrinsic characteristics.

PhD thesis

- 3) Transforming aerogels into fibrous structure improves their fragility issue and reduce fabrication time which can broaden their application in commercial sectors.

PhD thesis

- 4) Supercritical carbon dioxide can be used to fabricate cellulose aerogels and load drugs within the polymeric matrix of cellulose aerogels.

Chapters 3, 4 & 5

- 5) Solution blowing spinning is a simple novel technique to fabricate cellulose nonwoven aerogels consisting of nano/microfibers.

Chapter 5

- 6) The drug release of cellulose aerogel fibers can be tuned by aerogel hybridization with other biopolymers such as chitosan or by surface modification, for instance through gas-phase esterification methods.

Chapters 4 & 5

- 7) Wound dressing materials accelerate the wound healing process and improve the life quality of the patients.

- 8) Novelty can originate from an unseen combination of materials or processing techniques.

- 9) Clear visualization of processes and data is important to communicate complicated scientific messages effectively; a schematic image that represents the findings of an article allows everyone to understand the main results of a study easily.

- 10) Stand up for what you believe in, no matter how much you are impacted by inequitable conditions. “A smooth sea never made a skilled sailor.” – *Franklin D. Roosevelt*