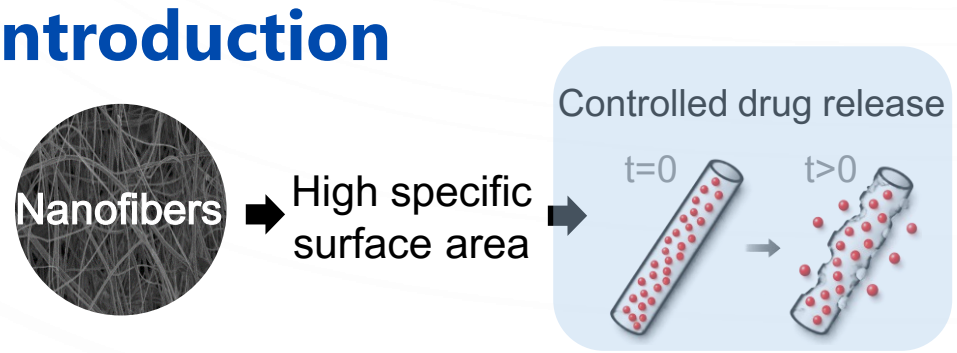
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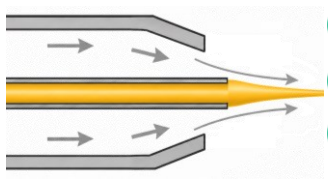
Green solvent-based production of gelatin/poly(ε-caprolactone) nanofibers by solution blow spinning for biomedical applications

Duarte, C. R.[1]; Feitosa, G. B.[2]; Teófilo, E. T.[2]; Moreira, F. K. V.[1] and Marconcini, J. M.[3]
1. Federal University of São Carlos; 2. Federal University of Cariri; 3. Embrapa Instrumentation

Introduction

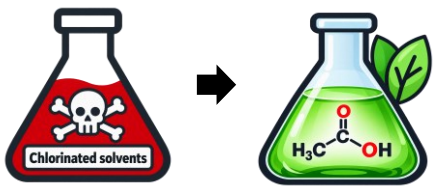


Advantages SBS over electrospinning



- Higher production rate;
- No electric field required;
- Independent of solution permittivity and conductivity.

Acetic acid as a solvent



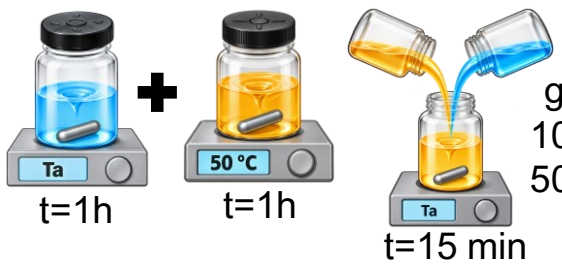
- Lower toxicity;
- Widely used in biomedical formulations.

Objective

Develop gelatin/PCL fibrous mats by SBS using acetic acid as a less toxic solvent alternative, aiming at potential applications in controlled drug release.

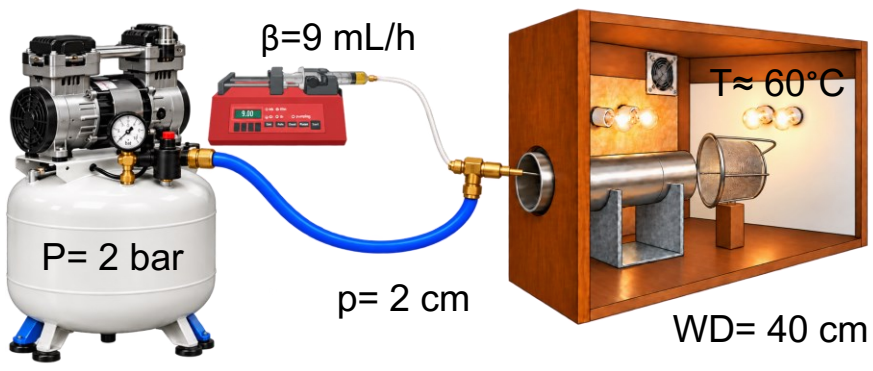
Experimental

Preparation of polymer solutions



C = 16% w/v gelatin/PCL (w/w): 100/0, 80/20, 70/30, 50/50, 70/30, 80/20, 0/100.

Production of fiber mats by SBS



Characterization of fibrous mats: Fiber yield (g/g); SEM (5 Kv; Diameter: ImageJ, 200 fibers/sample).

Results and Discussion

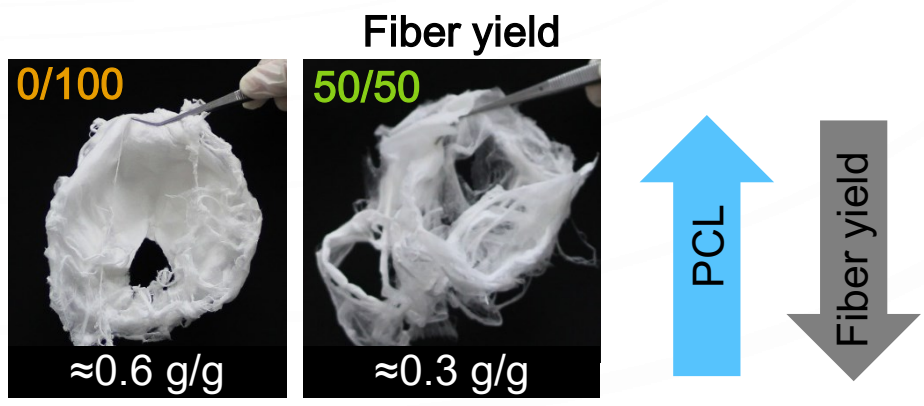


Figure 1. Photographs of fibrous mats

Morphological analysis

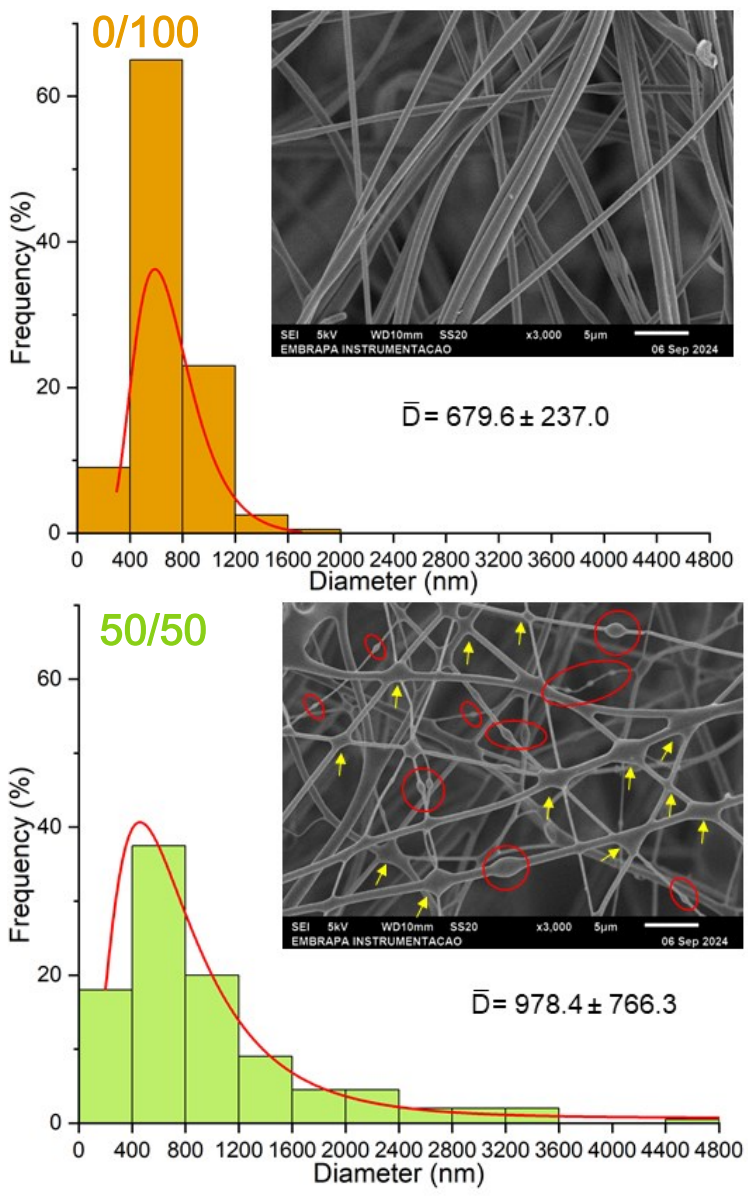


Figure 2. Fiber diameter distributions and SEM micrographs

Conclusions

- Gelatin/PCL fibers produced by SBS using acetic acid.
- Increasing PCL content → lower fiber yield → no mats at ≥80% PCL.
- SEM → 50% PCL: more heterogeneous fibers, with beads and fiber junctions.

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