

Drawing Collagen Fibers from a Solution of Monomers

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Description

Conventionally, many procedures have been developed and used for assembly of polymeric fibers such as collagen fibrils; however, none of the existing procedures are customized. Moreover, the strain directed assembly of collagen fibrils has never been disclosed earlier. Some of the other limitations associated with existing procedures/techniques are fabrication of unorganized fibrils, non-reproducibility, assembly of small sized fibrils, and reduced efficacy. **This approach discloses a novel procedure for fabrication of collagen fibers from a solution of monomers.**

Value Proposition

The procedure:

- Is highly repeatable
- Effectively allows for a strain directed assembly of collagen fibrils
- Allows for an assembly of highly organized and aligned collagen fibrils
- Enables the use of a solution/air interface to generate the required strain
- Is highly customized, enabling change of collagen concentration ranges, magnitude/distribution of strain and the rehydration environment
- Allows for a fiber drawing rate of 1micron/sec to 1cm/sec
- Allows for the concentration of accumulated monomers in the preferred range of 2.4-100 mg/ml
- Enables an adjustment of key process parameters such as temperature, ionic strength, pH and buffers
- Would be commercially useful for the following applications:
 - Fabrication of connective tissues
 - Organized scaffolding for regenerative medicine
 - Tissue repair
 - Alignment guide for other molecules such as carbon nanotubes

Intellectual Property Status

Provisional Application 61/760,396

License Status

Available for license

