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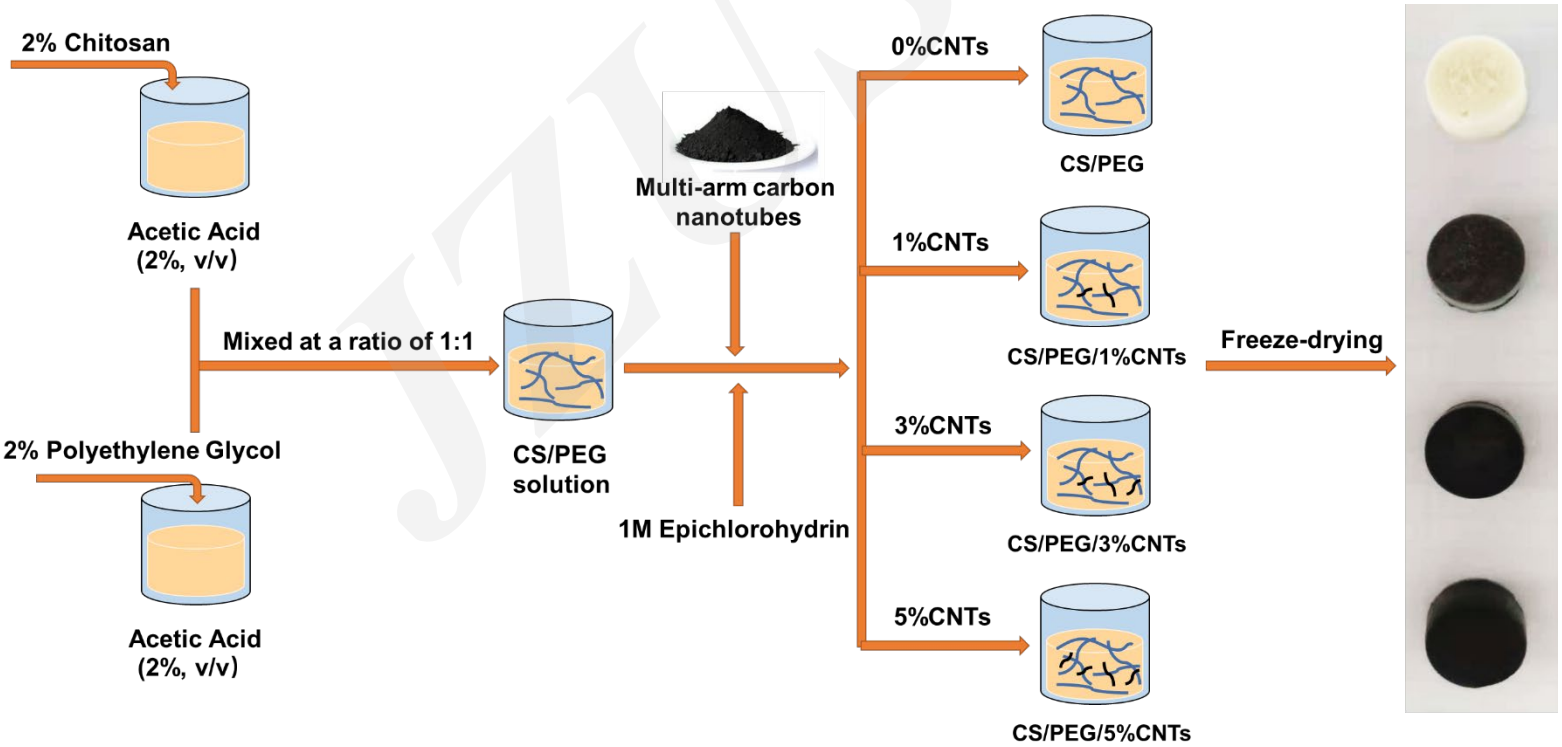
Biocompatible chitosan/polyethylene glycol/multi-walled carbon nanotube composite scaffolds for neural tissue engineering

Key words: **Multi-walled carbon nanotubes (MWCNTs); Cell-scaffold; PC12 cells; Biocompatibility**

Research Summary

In this article, the CS/PEG/MWCNT composite scaffold was prepared by freeze-drying method, and the application prospects of the composite scaffold in nerve tissue engineering were explored through physical and chemical characterization and biocompatibility study.



Research Summary

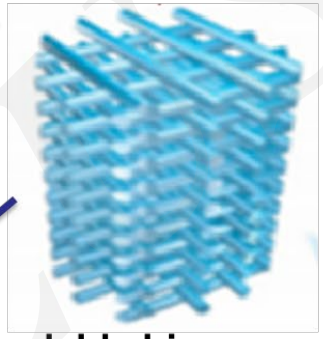
Mechanical properties



Chemical nature



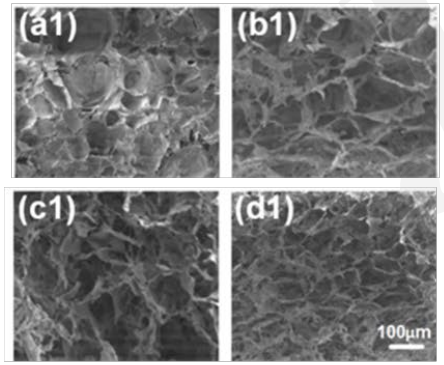
Synthesis and Cross-linking method



Degradable biocompatible nerve cell scaffold

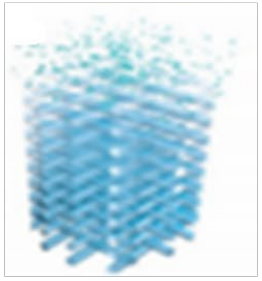
Performance characterization

- Micro structure(SEM)
- Porosity
- Water swelling
- etc.



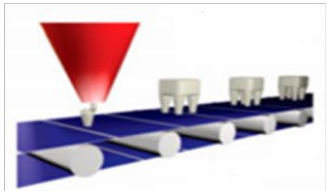
Biological performance

- Biocompatibility
- Cytotoxicity
- Promote differentiation



Production efficiency

- Production Method
- cost



Conclusion

- **After adding CNTs, the overall microstructure of the scaffold did not change significantly, but a small amount of pore wall thickens and pore diameter decreased.**

- **As the concentration of CNTs increases, the conductivity and mechanical properties of the composite scaffold increased, and the swelling rate and biodegradation rate decreased.**

- **PC12 cells have significant differentiation ability in Cs/PEG/CNTs, and successfully expressed the relevant markers of neural cell differentiation.**