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Topic of the Speech:
Silk/magnesium Filaments Reinforced Nerve Guidance Conduits with Composite Structures

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Professor Gang Li is currently a full professor at the National Engineering Laboratory for Modern Silk, Soochow University, China. Dr. Li is the 15th high level talent of “Top six talent peaks” and selected talent of “Double Creative Plan" in Jiangsu province of China. Dr. Li received his MEng. from Donghua University, Shanghai, China, and obtained his Ph.D. in Biomedical textiles and Engineering from the Hong Kong Polytechnic University. Prior to his current academic position, Dr. Li has been served at DuPont China Holding Co., Ltd. in Shanghai. Dr. Li presented talks, organized symposia and workshops at various international scientific conferences, etc. Dr. Li’s research interests focus on biomedical materials, implants and devices using combination of biomaterials, medical and textile engineering, as well as functional textiles.

Research Interests:
Dr. Li’s research interests focus on biomedical materials, implants and devices using combination of biomaterials, medical and textile engineering, as well as functional textiles, as follows:
Biomedical stents/scaffolds/prostheses with drug delivery functions;
Functional textiles.

Education Background:
Ph.D. in Biomedical textiles and engineering, The Hong Kong Polytechnic University, Hong Kong, 2013
MSc in Biomedical textiles and engineering, Donghua University, China, 2009
BSc in Textile Engineering, Anhui Polytechnic University, China, 2006
Professional Experience:
06/2019-present, Professor, National Engineering Laboratory for Modern Silk, College of Textile and Clothing Engineering, Soochow University, China
06/2014-06/2019, Associate Professor, National Engineering Laboratory for Modern Silk, College of Textile and Clothing Engineering, Soochow University, China
08/2013-06/2014, The Hong Kong Polytechnic University, Research Associate
12/2009-08/2010, The Hong Kong Polytechnic University, Research Assistant
2008-2009, DuPont China Holding Co., Ltd, Shanghai, Applied Biological Science Department

Honors and Awards:
The 15th high level talent of “Top six talent peaks” in Jiangsu Province (2018)
The 7th academic forum in textiles of Mainland, Hong Kong and Taiwan, Outstanding academic paper prize (2016)
The 1st Hong Kong Innovation Day, Champion, Hong Kong (2014)
Membership in Professional Society
Senior member of China Textile Engineering Society
Member of Chinese Society for Biomaterials
Member of the Textile Engineering Standards Committee in Jiangsu
Expert of high-tech enterprise expert database in Jiangsu Province
Vice director of Young committee of Jiangsu Textile Engineering Society

ABSTRACT SUBMISSION
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Silk/magnesium Filaments Reinforced Nerve Guidance Conduits with Composite Structures

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ABSTRACT (NO MORE THAN 500 WORDS:)

Peripheral nerve repair is a common but challenging surgical treatment. Many artificial nerve grafts have been developed, including nerve guidance conduits (NGCs) with biocompatibility, suitable mechanical properties and topography to guide axon growth. However, there remains a need to promote nerve regeneration and accelerate functional recovery using NGCs for nerve reconstruction. Here, silk fibroin (SF) and magnesium (S/Mg) filaments were braided into an inner layer of NGC and freeze-dried with a solution of SF and chitosan (CS). The mechanical stress of these S/Mg-SF/CS conduits reached 2.7 ± 0.19 N and possessed high compression strength. The conduits were used to repair 10 mm sciatic nerve gaps in rats. The wet weight ratio of the gastrocnemius muscle a target muscle for the sciatic nerve related to motor and sensory functions in the NGC group reached 83.5% of that in the autogenous group in 8 weeks; the nerve ports at both ends of the NGC grew well. When the distal end of the regenerated nerve was observed by Transmission Electron Microscopy (TEM), there was no significance difference in the diameter and thickness of the myelin sheath between the autograft and S/Mg-SF/CS group, indicating that S/Mg-SF/CS NGC in this study promoted growth of damaged nerves and provided appropriate physio-mechanical guidance, thus suggesting potential in artificial nerve transplantation.