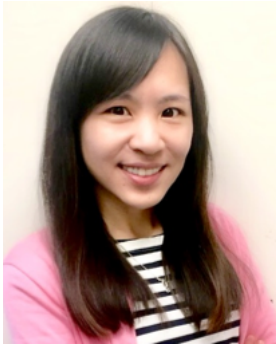
Wei-Chen Huang (黃薇蓁)



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CURRENT POSITION

National Chiao Tung University Hsinchu, Taiwan
Assistant Professor,
Department of Electrical and Computer Engineering Aug. 2019-present

EDUCATION

National Chiao Tung University Taiwan, TW
PhD, Materials Science and Engineering Sep. 2011 – May. 2015

National Chiao Tung University Taiwan, TW
MS, Materials Science and Engineering 2007 - 2009

National Chiao Tung University Taiwan, TW
BS, Materials Science and Engineering 2003 - 2007

EXPERIENCE

Taipei Medical University Taipei, Taiwan
Assistant Professor,
College of Biomedical Engineering
Graduate Institute of Biomedical Materials and Tissue Engineering Feb. 2017-July. 2019

Carnegie Mellon University Pittsburgh, PA, USA
Postdoctoral Fellow, Department of Materials Science and Engineering Jul. 2015 – Jan. 2017
Advisor: Christopher J Bettinger
Design and Fabrication of Ultra-compliant Neural Implants

OTHER EXPERIENCE

Delta Electronics, Inc. Taiwan, TW
Chemical R&D Engineer Apr.2010 – Jun.2011
Research and Development Fabrication of Supercapacitors

MAJOR RESEARCH INTERESTS

Soft Bioelectronics
Biomaterials
Neural Interfaces/Implants
Tissue Engineering
Nanotechnology

HONORS

MOST Young Scholar Fellowship (2019-2023) 2019
Ministry of Science and Technology, R.O.C, Taiwan

Young Investigator Award 2019
Zhao- Ren Li Scholarship for Biomedical Engineering 李昭仁教授生醫工程基金會

Young Investigator Award-Silver award 2018
The 3rd Global Conference on Biomedical Engineering (2018GCBME)

Young Investigator Award 2017
The 4th International Symposium of Materials on Regenerative Medicine. (4th ISOMRM)

Best Student Oral Presentation Award 2015
The 5th Asian Biomaterials Congress (ABMC5), Taiwan

11th National Innovation Award 2014
Institute for Biotechnology and Medicine Industry, Taiwan

7th World Congress on Preventive and Regenerative Medicine Poster Award 2014
National Yang Ming University, Taiwan

Postdoctoral Research Abroad Program - Postdoctoral Scholarship 2014
Ministry of Science and Technology, R.O.C, Taiwan

5th LCY Education Foundation Scholarship 2014
LCY Chemical Corp., Taiwan

Graduate Student Research Paper Competition – Gold Award 2014
Society for the Advancement of Material and Process Engineering, R.O.C, Taiwan

China/Taiwan Cross-Strait Biomaterials and Drug Delivery Symposium-Oral Award 2014
National Tsing Hua Universtiy, Taiwan

Taiwan Materials Research Society- Poster Award 2013
Taiwan Materials Research Society, National Central University, Taiwan

Biotechnology Research and Application Innovation Competition – Silver Award 2009
Ministry of Economic Affairs, R.O.C, Taiwan

Entrepreneurial Funding Competition - Entrepreneurial Award 2009
Polaris Securities Co., Ltd, Taiwan

Entrepreneurial Funding Competition - Silver Award 2009
Industrial Bank of Taiwan

National Chiao Tung University Excellent Teaching Assistant Award 2008
National Chiao Tung University, Taiwan

TEACHING EXPERIENCES

Biomedical Engineering Research, National Chiao Tung University
Introduction of Biomaterials, Taipei Medical University
Colloid Science and Engineering, Taipei Medical University
Introduction of Materials Science and Engineering, Taipei Medical University
Biointerfaces Engineering, Taipei Medical University

PUBLICATIONS

1. C. C. Lin, J. J. Chang, M. C. Yung, S.-Y. Chen, **W. C. Huang***, Spontaneously-Micropatterned Silk/Gelatin Scaffolds with Topographical, Biological, and Electrical Stimuli for Neuronal Regulation, **ACS Biomater. Sci. Eng.** 2020, 6(2): 1144–1153

2. **W. C. Huang**, H. S. Chi, Y. C. Lee, Y. C. Lo, T. C. Liu, M. Y. Chiang, H. Y. Chen, S. J. Li, Y. Y. Chen, S. Y. Chen, Gene-Embedded Nanostructural Biotic-Abiotic Optoelectrode Arrays Applied for Synchronous Brain Optogenetics and Neural Signal Recording, **ACS Appl. Mater. Interfaces.** 2019, 11(12):11270-11282.

3. C. N. Huang, Z. T. Tang, F. E. Chan, T. Burnouf. P. C. Chen*, **W. C. Huang*,** Fabrication of. Co-electrodeposition of Plasma Proteins/Iridium Oxide Hybrid Films. **Ceramics International**. 2018 DOI: 10.1016/j.ceramint.2018.08.224

4. **W. C. Huang**, X. C. Ong, I. S. Kwon, C. Gopinath ,L. E. Fisher, H. Wu, G. Fedder, R. A Gaunt, C. J Bettinger, Ultra-Compliant Hydrogel-Based Neural Interfaces Fabricated by Aqueous-Phase Microtransfer Printing. **Adv. Funct. Mat**. 2018, 28(29): 1801059.

5. X. C. Ong, **W. C. Huang**, I. S. Kwon, C. Gopinath, L. E. Fisher, R. A Gaunt, C. J Bettinger, G. Fedder, Ultra-Compliant Peripheral Nerve Cuff Electrode With Hydrogel Adhesion. **IEEE, MEMS,** 2018, 376-379.

6. **W. C. Huang,**F. Ali, J. Zhao, K. Rhee, C. Mou, C. Bettinger, Ultrasound-Mediated Self-Healing Hydrogels Based on Tunable Metal-Organic Bonding. **Biomacromolecules**. 2017, 18(4): 1162–71.

7. C. F. Wang, S. H. Yang, S. H. Lin, P. C. Chen, Y. C. Lo, H. C. Pan, H. Y. Lai, L. D. Liao, H. C. Lin, H. Y. Chen, **W. C. Huang**, W. J. Huang, Y. Y. Chen. A Proof-of-Principle Simulation for Closed-loop Control Based on Preexisting Experimental Thalamic DBS-Enhanced Instrumental Learning. **Brain Stimulation.**2017 10(3): 672-83

8. **W. C. Huang**, Y. C. Lo, C. Y. Chu, Y. Y. Chen, S. Y. Chen, Conductive Nanogel-Interfaced Neural Microelectrode Arrays with Electrically Controlled in-situ Delivery of Manganese Ions Enabling High-resolution MEMRI for Synchronous Neural Tracing with Deep Brain Stimulation. **Biomaterials**. 2017 122: 141-53.

9. S. H. Yang, Y. Y. Chen, S. H. Lin, L. D. Liao, H. H. Lu, C. F. Wang, P. C. Chen, Y. C. Lo, T. D. Phan, H. Y. Chao, H. C. Lin, H. Y. Lai, **W. C. Huang**, A Sliced Inverse Regression (SIR) Decoding the Forelimb Movement from Neuronal Spikes in the Rat Motor Cortex. **Frontiers in Neuroscience** 2016, 10: 556.

10. **W. C. Huang,**H. Wu and C. J. Bettinger, Materials and Microfabrication Processes for Next-generation Brain-Machine Devices. **SPIE Newsroom** 2016 DOI: 10.1117/2.1201610.006638

11. T. Y. Hsieh, **W. C. Huang**, Y. D. Kang, C. Y. Chu, W. L. Liao, Y. Y. Chen, S. Y. Chen, Neurotensin-Conjugated Reduced Graphene Oxide with Multi-Stage Near-Infrared-Triggered Synergic Targeted Neuron Gene Transfection In Vitro and In Vivo for Neurodegenerative Disease Therapy. **Adv. Healthc. Mater.** 2016 5(23): 3016-26.

12. J. H. Fang, T. L. Chiu, **W. C. Huang**, Y. H. Lai, S. H. Hu, Y. Y. Chen, S. Y. Chen, Dual-Targeting Lactoferrin-Conjugated Polymerized Magnetic Polydiacetylene-Assembled Nanocarriers With Self-Responsive Fluorescence/Magnetic Resonance Imaging for In Vivo Brain Tumor Therapy, **Adv. Health. Mater.** 2016 5(6): 688-95.

13. T. C. Liu, M. C. Chuang, C. Y. Chu, **W. C. Huang**, H. Y. Lai, C. T. Wang, W. L. Chu, S. Y. Chen, Y. Y. C, The implantable Graphene-Based Neural Electrode Interfaces for Electrophysiology & Neurochemistry in In Vivo Hyperacute Stroke Model. **ACS Appl. Mater. Interfaces**. 2016, 8(1): 187–96.

14. W. M. Li, C. S. Chiang, **W. C. Huang**, C. W. Su, M. Y. Chiang, J. Y. Chen, S. Y. Chen, Amifostine-Conjugated pH-Sensitive Calcium Phosphate-Covered Magnetic-Amphiphilic Gelatin Nanoparticles for Controlled Intracellular Dual Drug Release for Dual-targeting in HER-2-overexpressing Breast Cancer. **J. Control. Release.** 2015, 220(28): 107-18.

15. **W. C. Huang,**C. Y. Chu, S. Y. Chen, Y. Y. Chen, Neural Interfaces With Electrically Controllable Delivery of Manganese Ions Applied for MEMRI-functionalized Deep Brain Stimulation.**J. Control. Release.** 09/2015; 213:e112-e113.

16. **W. C. Huang**, H. Y. Lai, L. W. Kuo, C. H. Liao, P. H. Chang, T. C. Liu, S. Y. Chen, Y. Y. Chen, Multifunctional Three-Dimensional Patternable Drug-Embedded Nanocarrier-Based Interfaces to Enhance Signal Recording and Reduce Neuron Degeneration in Chronic Neural Implantation, **Adv. Mater.** 2015, 27(28):4186-93

17. P.-h. Chang, **W. C. Huang**, T. J. Lee, Y. P. Chang, and S. Y. Chen, Self-reactivated Mesostructured Ca−Al−O Composite for Enhanced High-Temperature CO_2Capture and Carbonation/Calcination Cycles Performance, **ACS Appl. Mater. Interfaces.** 2015, 7(1) 6172−79.

18. **W. C. Huang**, K. H. Liu, T. C. Liu, D. M. Liu, S. Y. Chen. Synergistic Hierarchical Silicone-Modified Polysaccharide Hybrid as A Soft Scaffold to Control Cell Adhesion and Proliferation, **Acta Biomater**. 2014,10(8): 3546-56.

19. H. W. Liu, **W. C. Huang,**C. S. Chiang, S. H. Hu, C. H. Liao,Y. Y. Chen, and S. Y. Chen,Arrayed rGO SH /PMA SH Microcapsule Platform Integrating Surface Topography, Chemical

Cues, and ElectricalStimulation for Three-Dimensional Neuron-Like Cell Growth and Neurite Sprouting, **Adv. Funct. Mater.** 2014, 24(24): 3715–24.

20. M. Larsson**, W. C. Huang,** M. H. Hsiao, Y. J. Wang, M. Nydén, S. H. Chiou, D. M Liu, Biomedical Applications and Colloidal Properties of Amphiphilically Modified Chitosan Hybrids**, Prog. Polym. Sci.** 2013,38(9): 1307–28.

21. **W. C. Huang**, S. Y. Chen, D. M. Liu. An Amphiphilic Silicone-Modified Polysaccharide Molecular Hybrid with In Situ Forming of Hierarchical Superporous Architecture upon Swelling, **Soft Matter**, 2012, 8: 10868-76.

22. **W. C. Huang**, T. J. Lee, C. S. Hsiao, S. Y. Chen, D. M. Liu. Characterization and Drug Release Behavior of Chip-Like Amphiphilic Chitosan–Silica Hybrid Hydrogel for Electrically Modulated Release of Ethosuximide: An In Vitro Study, **J. Mater. Chem.** 2011, 21: 16077-85.

23. **W. C. Huang**, S. H. Hu, K. H. Liu, S. Y. Chen, D. M. Liu. A Flexible Drug Delivery Chip for The Magnetically-Controlled Release of Anti-Epileptic Drugs, **J. control. release**, 2009,139(3): 221–28.

PATENTS

1.中華民國/美國 98
發明名稱 :可撓性磁敏感藥物釋放結構元件
發明人 : 陳三元 黃薇蓁 劉典謨

2. 中華民國 57466-TW-PA
發明名稱 ：聚二氧乙基噻吩兩性幾丁聚醣聚合物及具有網絡結構之水膠薄膜
英 文 名 稱 ： POLY(3,4-ETHYLENEDIOXYTHIOPHENE) GRAFTED AMPHIPHILIC CHITOSAN POLYMER AND THE HYDROGEL MEMBRANE WITH A NETWORK STRUCTURE
發明人 ：黃薇蓁，陳三元

INVITED PRESENTATIONS

National Tsing Hwa University. Institute of Electronics Engineering. Mar. 2020
National Taiwan University. Institute of Polymer Science and Engineering. Dec 2019
Minghsin University of Science and Technology. Department of Chemical and Materials Engineering. Dec 2019
National Central University. Department of Electrical and Computer Engineering. Dec 2019
National Yang Ming University. Department of Biomedical Engineering. Mar 2019
Asia Pacific Society for Materials Research.2018 Annual Meeting, Hokkaido, Japan. Jul 2018
National Tsing Hwa University. Department of Biomedical Engineering and Environmental Science.

Dec 2017
National Chiao Tung University. Department of Materials Science and Engineering. Oct 2017

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Bioengineering
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Ministry of Science and Technology
108 年度「年輕學者養成計畫」愛因斯坦培植計畫
搭載幹細胞之超生物順應可降解無線微電極陣列應用於電調控及監控功能之中樞神經再生治療 (Feb-1-2019 to Jan-31-2023) $~20,000,000NTD

Completed

Taipei Medical University - National Taipei University of Technology
具電刺激及接觸引導生長與監控功能之黏附型蠶絲蛋白袖形電極應用於促進周邊神經再生
(Jan-1-2017 to Dec-31-2017) $500,000 NTD

Ministry of Science and Technology
超生物順應相容之可降解水膠神經電極晶片應用於周邊神經損傷的控制與治療 (Aug-1-2017 to Jul-31-2019) $2400,000 NTD