Prof. Hsisheng Teng (鄧熙聖教授)

Ph.D.：Engineering, Brown University, 1992

M.S. : Engineering, Brown University, 1991

B.S. : Chemical Engineering, National Cheng Kung University, 1984

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Research Interests

Photocatalytic Water Splitting;
Photovoltaic and Photosynthetic Cells;
Electrochemical Supercapacitors;
Graphene Oxide Nanostructure
Lithium Ion Battery

Research Awards and Honors:

2013~University Chair Professor, National Cheng Kung University

2012~ Editor in Chief, Journal of the Taiwan Institute of Chemical Engineers

2012~Coordinator of the Chemical Engineering Program, National Science Council

2012 Outstanding Engineering Professor Award, Chinese Institute of Engineers

2011 Thomson Reuters Taiwan Research Front Awards, Thomson Reuters

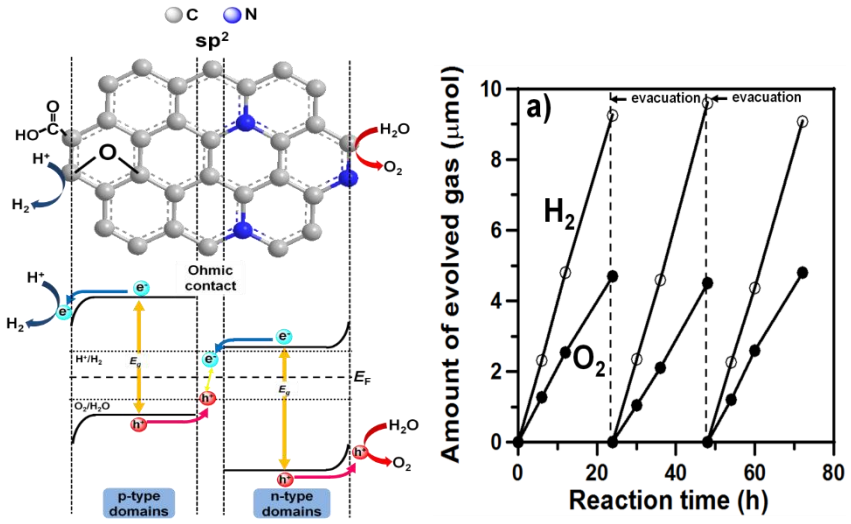
2011 Research Excellence Award, National Science Council.

Representative Publications

1. Yeh, T.F.; Cihlář, J.; Chang, C.Y.; Cheng, C.; Teng, H.*, *Materials Today* **2013**, Vol. 16, 78 - 84.
2. Li, T.L.; Lee, Y.L.; Teng, H.*, *Energy and Environmental Science* **2012**, Vol. 5, 5315 - 5324.
3. Huang, C.W.; Wu, C.A.; Hou, S.S.; Kuo, P.L.; Hsieh, C.T.; Teng, H.*, *Advanced Functional Materials* **2012**, Vol. 22. 4677 - 4685.
4. Li, T.L.; Lee, Y.L.; Teng, H.*, *Journal of Materials Chemistry* **2011**, Vol. 21, 5089 - 5098.
5. Yeh, T.F.; Syu, J.M.; Cheng, C.; Chang, T.H.; Teng, H.* *Advanced Functional Materials* **2010**, Vol. 20, 2255 - 2262.
6. Hu, C.C.; Teng, H.*, *Journal of Catalysis* **2010**, Vol. 272, 1 - 8.
7. Tsai, C.-C. and Teng, H.*, *Chemistry of Materials* **2006**, Vol. 18, 367 - 373.

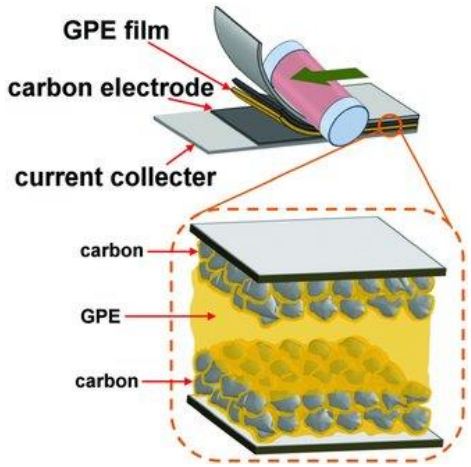
Research

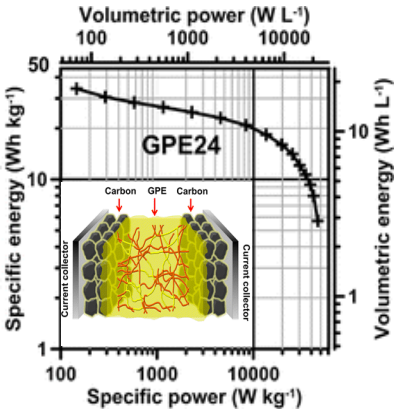
Graphene Oxide Quantum Dots for Photocatalytic Water Splitting



Nitrogen-doped graphene oxide quantum dots exhibit both p- and n-type conductivities and catalyze overall water-splitting under visible-light irradiation.

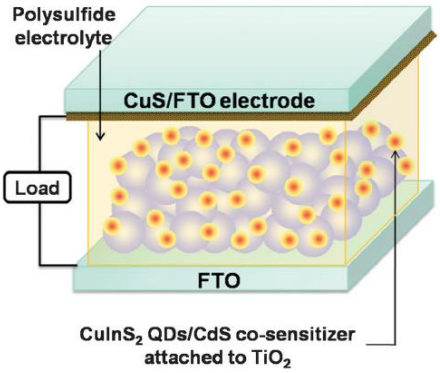
Gel Polymer Electrolytes (GPE) for Supercapacitors

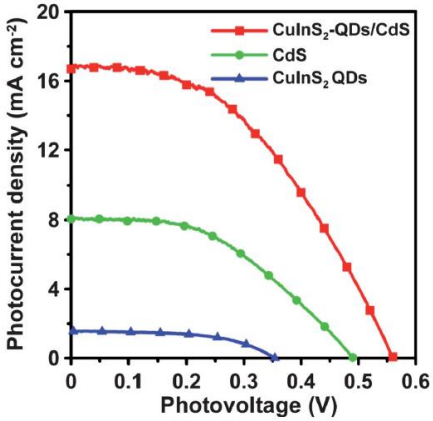


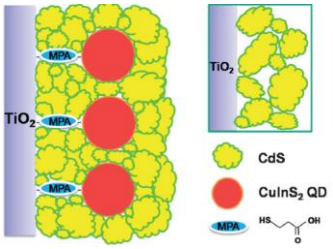


Roll-to-roll assembly of electric double-layer capacitors (EDLCs) using the proposed solid-state GPE. The GPE EDLC delivers 20 Wh kg^{-1} (approximately 10 Wh L^{-1}) at a high power of 10 kW kg^{-1} (approximately 5 kW L^{-1}) when using a high-porosity carbon electrode derived from mesophase pitch.

Quantum Dot-Sensitized Solar Cells

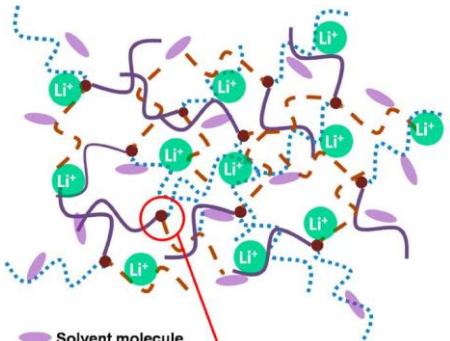


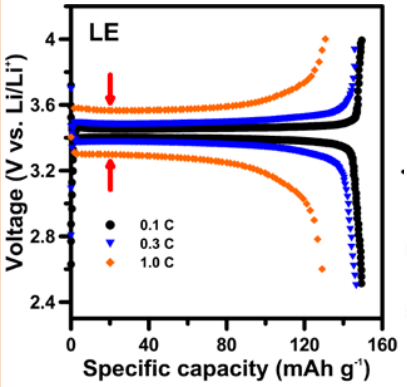


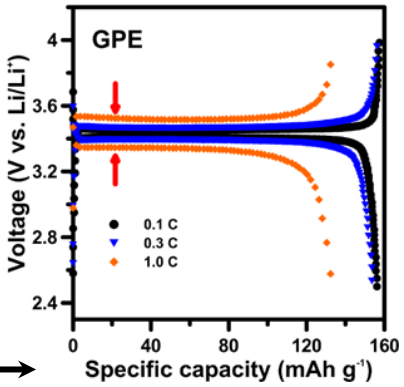


A TiO_2-sensitization layer consisting of CdS nanocrystals closely packed around the linked $CuInS_2$-QDs pillars yields a high conversion efficiency of 5 % for the resulting sensitized solar cell.

Gel Polymer Electrolyte for Lithium Ion Batteries







A gel polymer electrolyte (GPE) incorporated into a Li/GPE/$LiFePO_4$ battery exhibiting IR drop 44% smaller than that of the liquid electrolyte (LE) battery, Li/LE/$LiFePO_4$