



## 立體蜂巢狀光觸媒光電反應裝置

提案人：李慧梅 教授

單位：國立臺灣大學 環境工程學研究所

簡歷：美國普渡大學環工博士

市場及需求：增加電壓在使用光觸媒以連續式處理揮發性氣體有機物可增加多倍反應速率之實用性，尤其在可見光光電催化方面上，可供目前市面上所有空氣濾清裝置在光觸媒分解室內空氣揮發性有機物 VOCs，增至應用於一般工廠常見之高濃度揮發性有機物 VOCs，皆有低成本高效率之環保效能。

技術摘要(含成果)：利用在水中導電電流分布為整面狀態加上溶液會產生電雙層形成固定電容去提供給外層批復光觸媒施加偏壓(電壓)，再配合改質後之光觸媒可在低電壓可見光共同催化下達到高效率之處理效果，目前本實驗室研究在分解室內揮發性有機物甲苯上面具有提升多倍反應效率之效果以可見光加上改質光觸媒 Ag/AgBr/TiO<sub>2</sub> 為例，如下圖：

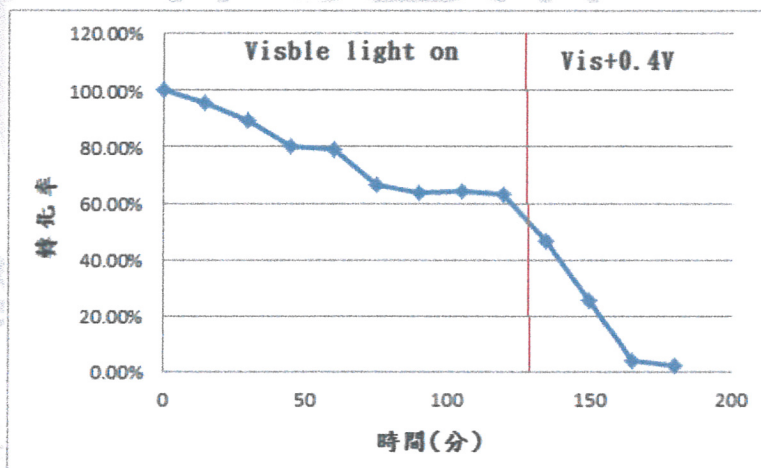


圖 Ag/AgBr/TiO<sub>2</sub> 光催化與光電催化實驗結果 30%RH，0.7LPM(停留時間 8 秒，在 180 分鐘點最佳轉化率為 98.44%)

優勢：目前唯一立體狀(3D)在處理氣體之連續式光觸媒光電反應器

競爭產品：無

專利現況：現正申請中

聯絡方式(請不用填)：

臺大產學合作總中心

Tel: 02-3366-9945, E-mail: ntuciac@ntu.edu.tw





## Three-Dimensional Honeycomb Shaped Photocatalyst Photoelectric Reactor

**PI :** Prof. LEE WHEI-MAY

Department of Graduate institute of Environment Engineering, National Taiwan University.

**Experience:** Purdue University Ph.D

### Market Needs:

Increasing the voltage in the use of photocatalyst in order to continuously handle volatile organic compounds can increase the rate of multiple times the practicality of the reaction, especially in the visible photoelectrocatalytic aspects of the available on the market all the air cleaning device in the photocatalytic decomposition of indoor air volatile organic compounds VOCs , Increased to the common factory common high concentrations of volatile organic compounds VOCs, are low-cost high-efficiency environmental performance.

### Our Technology:

The use of the conductive current distribution in the water as a whole surface with the solution will produce electric double layer to form a fixed capacitor to the outer layer of photocatalyst to apply the bias(voltage), and then with the modified photocatalyst can be low-voltage visible light under the co-catalyzed High efficiency of the treatment effect, the current laboratory research in the decomposition of volatile organic compound toluene above the effect of increasing the efficiency of multiple times to see the visible light plus modified photocatalyst Ag / AgBr / TiO<sub>2</sub>, for example, as shown below:

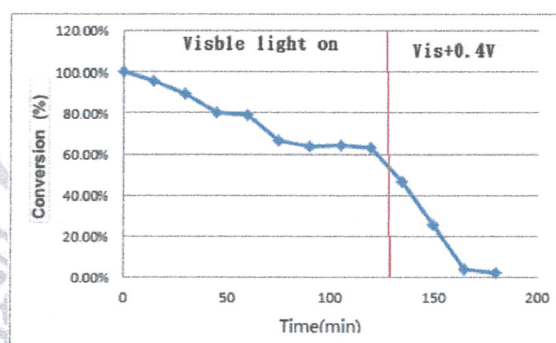


Figure Ag/AgBr/TiO<sub>2</sub> Photocatalysis and photoelectrocatalysis The results of 30% RH, 0.7LPM (residence time 8 seconds, at 180 minutes the best conversion rate of 98.44%)

**Strength:** At present the only stereoscopic (3D) in the treatment of gas continuous photocatalytic photoelectric reactor.

**Competing Products:**None

**Intellectual Properties:** In the application

**Contact (do not need to fill out):**

Center for Industry-Academia Cooperation, NTU

Tel: 02-3366-9945, E-mail: ntuciac@ntu.edu.tw

This information herein is intended for potential license of NTU technology only. Other usage of all or portion of this information in whatever form or means is strictly prohibited. Kindly contact us and we will help to achieve your goal the best we can.