

附件四、技術說明表



智慧多離子感測與調控系統

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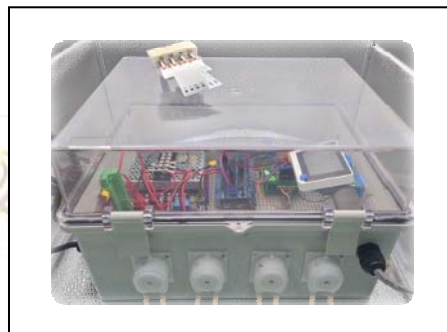
簡歷：

系網教授介紹：<https://reurl.cc/aGR319>

實驗室網站：<https://chenlinchi.wixsite.com/ibslab>

市場及需求：

農業水耕養液監測、水產養殖業水質監測、水族業者水質管理、環境水質管理



技術摘要(含成果)：

本系統運用固態式離子感測電極陣列為核心技術，已結合多通道電位感測模組與無線傳輸裝置，可快速且同時量測水體中的多種離子濃度，達到實地即時的遠端監控與長期追蹤。主要功能包含：(1) 自動抽取校正液且完成校正程序、(2) 定時抽取樣本感測多種離子濃度、(3) 依據感測濃度補充特定液體進目標水體(使用者想調整離子濃度的水體)中、(4) 感測數據可儲存於硬體系統中與無線傳輸至雲端儲存空間、(5) 設有雲端介面可供使用者觀看感測數據與提供其他服務。

優勢：

1. 同時量測多種離子，且固態式離子感測電極陣列之製作成本大幅下降並利於大量製作
2. 所有程序自動化，包含校正、感測和補充等功能，不需另外添加試劑進入待測樣本
3. 使用者可遠端控制系統與觀測監測結果
4. 可結合其他環境感測器，實現物聯網感測網

競爭產品：

1. Horiba LAQUAtwin (單一離子監測、離子選擇電極、水質監控領域、產品為一感測器)
2. Abbott iSTAT (多離子監測、離子選擇電極、醫療照護領域、產品含一感測器與試片)

專利現況：

- (1) 本技術之試片部分已有相關專利(中華民國專利申請號: I517989 與 I695166)。
- (2) 近年來本團隊專注於固態式離子選擇電極試片之研究與開發，以提升試片的感測能力，並致力將試片與後端模組、使用者介面整合，以打造出完整的離子感測系統平台

聯絡方式：

臺大產學合作總中心 Tel: 02-3366-9945, E-mail: ordiac@ntu.edu.tw

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Intelligent multi-ion sensing and controlling system

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Department of Biomechatronics Engineering, National Taiwan U.

Experience:

- <https://reurl.cc/aGR319>
- <https://chenlinchi.wixsite.com/ibslab>

Market Needs:

Hydroponics nutrient monitoring, household water quality monitoring, water quality monitoring in aquaculture, fishkeeping, and environmental management

Our Technology:

This system takes a solid-state ion sensing electrode array as its core technology and includes multi-channel potential sensing modules and wireless transmission. The system can quickly and simultaneously measure the concentration of various ions in the water body to achieve real-time remote monitoring and long-term tracking. The main functions: (1) automatically pumping the calibration solutions and finishing the calibration process; (2) pumping the samples and measuring multiple ion concentrations at a regular time; (3) supplying solutions (e.g., specific salt) into the target samples that users want to regulate according to the detection results; (4) the detection data can store into both the hardware system and i-cloud; (5) an internet surface shows the detection results and provide more services.

Strength:

1. Simultaneously measuring the concentration of various ions and the low cost of array manufacture.
2. All processes are automatic, including calibration, sensing and supplement. No extra kits are needed.
3. Users can see the detection results and control the system through IoT surface.
4. This system can be integrated with other IoT sensors.

Competing Products:

1. Horiba LAQUAtwin (single ion sensing, solid-state ion-selective electrode, water monitoring, product includes one sensor).
2. SABBOTT iSTAT (multiple ion sensing, solid-state ion-selective electrode, clinical diagnostics, product includes a sensor and a test chip).

Intellectual Properties:

1. Test chip is already a patent in Taiwan. (ROC Application Number: I517989 and I695166)
2. Our group focus on research and development of solid-state ion-selective electrode in order to improve its sensing performance. Meanwhile, we also dedicate ourselves to integration of test chips, hardware, and user interface to build a complete ion-sensing platform.

Contact:

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