

甲烷水合物海域探測與採樣工程技術之研發II

執行單位

國立中山大學海下科技研究所

計畫主持人

王兆璋

- 本計畫所開發之天然氣水合物海域探測與採樣技術，可應用於國內深海探勘及再生能源之場域，例如東北海域礦產資源潛能之調查，以及離岸風場或洋流發電場址的海床結構調查、施工建置和後續的水下監測、檢修與維護。

名稱：水下載具之通訊裝置

證號：I577190

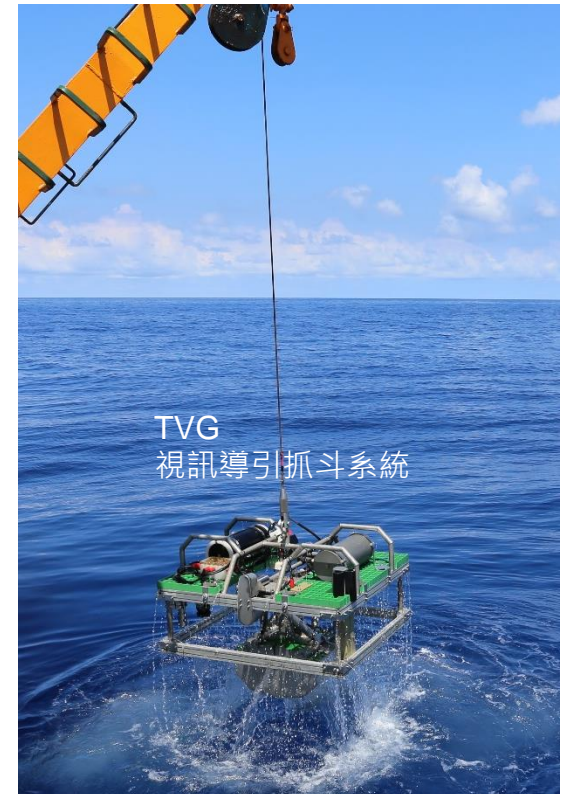
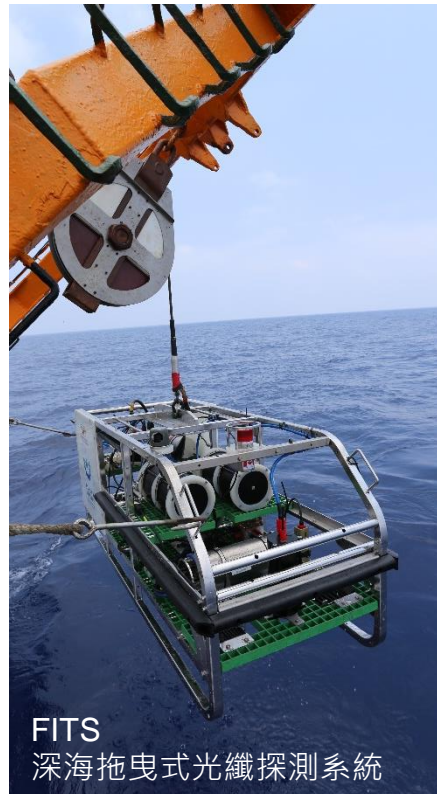
授予國家：中華民國

公告日：106 年 04 月 01 日

申請人：國立中山大學

發明人：陳信宏、王兆璋、李坤鴻、蘇家德、林原禾

此專利藉由一般海洋研究船必備之鹽溫深儀絞機電纜或是多功能絞機電纜，使用其中雙蕊絞線就可達成長距離即時寬頻資料傳輸與命令控制的目的；可應用於海洋能源產業、海洋觀光產業、以及科學研究，特別是海洋能源探勘產業，具有龐大市場規模。



- 本計畫之技術發展，係圍繞四個核心目標：(1)小範圍、定點、長時間之即時觀察與採樣；(2)硬質海床樣本之採集；(3)各形式生物樣本之採集；(4)完備之多感應器共載具系統。
- 本計畫已陸續將「高感度雷射光學探測系統」、「海床表層材質聲學分析系統」、「深海直流電阻探測系統」，整合於「深海拖曳式光纖探測系統FITS」，以達到同時間、同地點、多項科學參數之量測，以利評估天然氣水合物的存在與含量。
- 本計畫亦利用FITS作為迫沉拖體，由FITS延伸出「深海動力載台」，以執行定點觀測與採樣，並開發「自動推擠式採樣系統」，在無需機械手臂下，搭配深海動力載台，採集海床表層沉積物。本計畫亦開發「深海動力載台供電系統」，以提供探採作業所需之高功率穩定電源。

Development of survey and sampling tools for gas hydrate field exploration II

Execution Unit

Institute of Undersea Technology, National Sun Yat-sen University

Project Director

Chau-Chang Wang

- The survey and sampling technologies developed in this project can be applied to deep-sea exploration and renewable energy fields. For instance, the developed systems and devices can be applied to the geological investigation for mineral resource potential off NE Taiwan, and the site characterization study, facility installation, and underwater monitoring, inspection, and maintenance for offshore wind farms and tidal farms.

Taiwan Patent

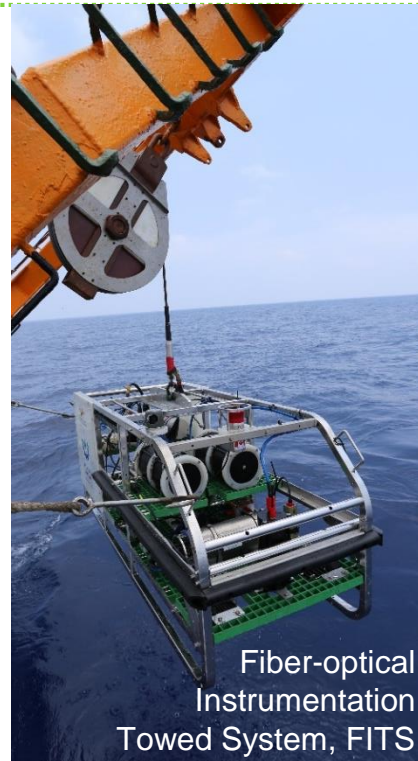
Communication device of underwater vehicle

Patent No.: I577190

Publication Date: 2017.04.01

Applicant: National Sun-Yat Sen University
Inventors: Chen, Hsin-Hung; Wang, Chau-Chang; Li, Kun-Hung; Su, Jia-De; Lin, Yuan-He

The patent achieves long-distance communication and control through twisted pair in CTD cable which is usually equipped on a research vessel, and can be applied to Marine tourism, oceanographic research, and especially the exploration of marine energy industry.



- The technology development of the project is centered around four objectives: (1) small-scale, fixed-point, and long-time observation and sampling; (2) sampling of hard seafloor sediments; (3) sampling of various marine organisms; (4) an expandable multi-sensor platform.
- The Fiber-optical Instrumentation Towed System (FITS) has been integrated with a high sensitivity laser sensing system, a surficial sediment geophysics analyzer, and a direct-current resistivity sensing system, in order to achieve co-site measurement of multiple scientific parameters for more effective assessment of gas hydrate resource.
- The FITS acts as a depressor for a mobile underwater vehicle, which is developed with the capability of performing hovering flights and maintaining position for close-up seafloor inspection and sampling. An automatic push corer is developed to equip with the mobile underwater vehicle, in order to execute sediment sampling without robotic arms involved. A power-supplying system is developed to provide stable high rated power for undersea operations.