

第三届海铃科技交叉论坛

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Tsung-Dao Lee Institute

Book of Abstracts

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Digital Integration of Geophysical, Geological and Geotechnical Data for Deepwater Site Characterizations

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Geophysical, geological and geotechnical data play a vital role in deepwater/ultra-deepwater site characterizations for subsea structures sitting on/below the seabed. From the engineering perspective, considering the risk of subsea development and the capital investment, the integration of the above three sets of data are paramount, especially during the planning phase of the project for offshore site investigations, not only to define the scope to be performed at the target site most effectively, but also to aid interpretation once engineering data are acquired for subsea structure design. Although geophysical data are advantageous in imaging the subsurface conditions over large offshore areas revealing important information about seabed features, and geological data can identify the sediment depositional history, the information obtained is usually qualitative from an engineering design perspective. Thus, this talk will present a quantitative framework to digitally integrate these three sets of data using machine learning. Examples from different regions with different data are presented, with a hope to promote this technique for deepwater site characterizations to reduce both the risk and the cost.

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水下声学释放器关键技术与应用

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声学释放器是一种集成了“水声通信”和“机械释放”功能的海洋仪器，是水下潜标系统必不可少的核心关键设备，是海洋中用量最大的声学仪器之一。报告详细介绍声学释放器研制中涉及的水声通信关键技术、高可靠机械释放结构设计方案，在此基础上，介绍三种适用于不同需求的典型声学释放器，分别是集成数据传输功能的大负载（10吨）全海深（11000米）声学释放器、可无损回收全部潜标系统的绳桶声学释放器、可设置回收时间的轻型声学释放器。

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Managing Risks In Complex Subsea Projects

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Successful installation and operation of complex systems in the deep ocean requires a comprehensive approach to managing risk throughout the entire project. Equipment installed in the deep ocean is exposed to extreme pressure, a highly corrosive environment, and can only be installed and maintained with advanced robotic tools and specialized vessels. From the concept stage through prototype validation, detailed design, manufacturing, testing, and installation; risk management can make the difference between success and failure. Understanding the mature approach to subsea system development used in military, submarine telecommunications, or offshore oil & gas applications can avoid costly mistakes and schedule delays. This talk introduces key concepts related to technology readiness levels (TRL), technology qualification, risk assessment & risk management, and describes essential processes to support successful subsea project delivery.

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燃料电池关键技术进展及应用探讨

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氢能作为一种清洁高效、灵活且可储可输的二次能源，是推动传统化石能源清洁高效利用和支撑可再生能源大规模发展的理想互联媒介。氢燃料电池作为氢能利用的主要装置，具有能量密度高、转化效率高、零碳排放等优点，在交通工具、分布式电站、航空航天等领域具有广泛的前景。本报告将分享氢燃料电池技术进展和应用现状，探讨燃料电池在地面交通、深远海等多领域的应用。