

**Abstract for ISA Workshop on
Polymetallic Nodule Mining Technology - Current Status and Challenges Ahead**

**A Way to Accomplish the Mining Technology for Polymetallic
Nodules**

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Continuous mining concept by using surface vessel, lifting pipe, buffer, flexible conduit and self-propelled seafloor miner seems to be most prospective for commercial production of polymetallic nodules. A self-propelled seafloor miner is prerequisite for realization of continuous nodules mining from 5,000m water depth. Reliable and precise operation of the deep-seabed miner from the sea surface is of particular importance. Such a remote operation of seafloor miner requires a total integrated control of the total mining system, since the entire components are closely linked and coupled in their dynamic behaviors.

In view of economics and reduction of technological risks, modeling-and-simulation of the total mining system and each sub-system products valuable data for decision making in hardware development. Tractive-and-driving performance of seafloor vehicle, efficiency of nodule pick-up device, transport of nodules through conduits, dynamic responses of lifting pipe etc. are computer simulated in preliminary design study. The key interests in technology development are focused on the development of self-propelled seafloor miner and nodule transport system through flexible conduit from the miner to buffer. The deep-seabed miner is developed based on modeling-and-simulation and multidisciplinary design optimization (MDO) technique. The essential issue extends to the real-time operation system as well. Integrated performance of the test miner, which is constructed in 1/20 scale of commercial mining capacity, and the flexible nodule transport system will be examined through sea-test near-

shore in 2009.

국제해저기구(ISA) 워크숍 참가 및 발표

- 워크숍명: 다금속단괴 채광기술의 현황 및 앞으로의 도전
- 기간: 2008. 2. 18 ~ 2. 22
- 장소: Chennai, India, NIOT (National Institute of Ocean Technology)

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- 발표제목: 다금속단괴 채광기술의 확보 방안 (A Way to Accomplish the Mining Technology for Polymetallic Nodules)

워크숍 참가 배경 및 목적:

국제해저기구(ISA)로부터의 2008년 1월 10일자 공문(수신: 해양수산부장관)의 “심해저 채광기술 워크숍” 한국측 참가 요청에 따라서 채광기술개발 분야의 홍섭 박사가 참가하여 한국의 기술개발 동향에 대하여 발표하기로 하였음. 아울러 한국, 중국, 인도 등 체약자간의 국제협력 프로그램에 관한 논의에 참여할 계획임.