

Heavy Mineral Assemblages in Core EC2005 in the Inner Shelf of East China Sea and their Significance of Provenance

J. DONG^{1,2}, A. C. LI^{1*}, F. J. XU³ AND K. D. ZHANG^{1,2}

¹Key Laboratory of Marine Geology and Environment, Institute of Oceanology, Chinese Academy of Sciences, Qingdao 266071, P. R. China

(*correspondence: acli@qdio.ac.cn, fzdongjiang@163.com)

²University of Chinese Academy of Sciences, Beijing 100049, P. R. China

³College of Geosciences, China University of Petroleum, Qingdao 266580, P. R. China

Detrital mineral, particularly the heavy mineral contains rich provenance information. They can play a significant role in sediment source identification, which is essential to source tracing and paleoenvironment rebuilding. However, sediment source study is still absent, especially during the period of the low sea level. In this paper heavy minerals in the bore hole EC2005, located in the southern center of mud area in the inner shelf of East China Sea, were identified and analyzed for their significance of provenances since 17.3Ka BP. The results show that: (1) in the sediment of grain size fraction 0.063-0.25mm, the average content of heavy minerals is 27.26% in range of 3.66% -89.62%. High content of heavy minerals appears in the horizon of rich authigenic pyrite. (2) The heavy minerals included mica, metallic minerals, amphibole, epidote, dolomite, pyroxene, typical metamorphic minerals (staurolite, kyanite, andalusite and fibrolite), altered minerals and authigenic pyrite, and they altogether occupy more than 96.00% of the total amount, but varied in content through core EC2005. (3) The distribution of heavy minerals can be divided into five units from the Unit I to Unit V from bottom to top, the diagnostic minerals are mica, dolomite, mica, authigenic pyrite and titanite, respectively. In combination with AMS¹⁴C dating, geochemical elements, clay mineral, sea level data in the west Pacific Ocean and other parameters, the authors think that the sediments in the inner shelf of East China Sea since 17.3Ka BP has been derived mainly from the Yangtze River, and also come from coastal rivers of Zhejiang Province.