The University of Hong Kong
School of Biological Sciences

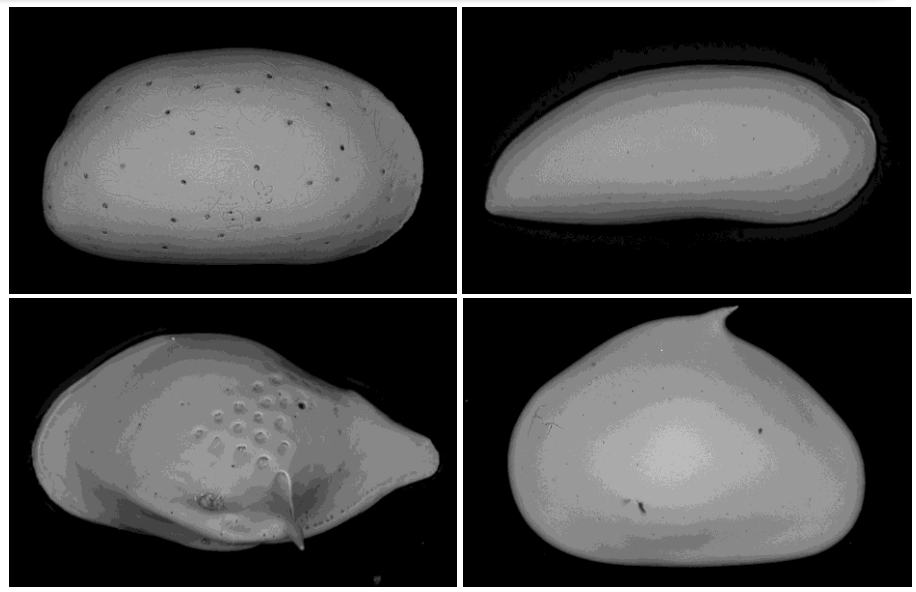
Qualifying Seminar

Deep-Sea Benthic Ecosystem Responses to Quaternary Climatic Variability in the Western Pacific Warm Pool: Insights from Ostracoda across Multiple Time Scales

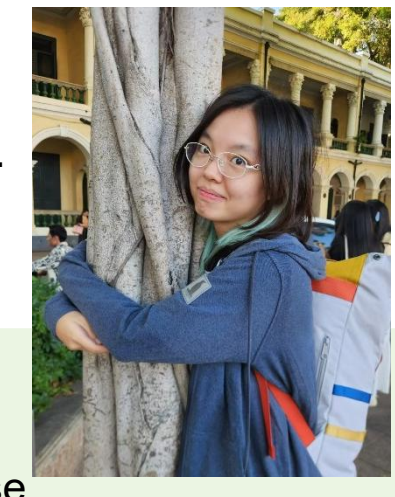
Date: July 9th 2026

Time: 15:00

Venue: 6N-11



About the speaker:



Zhang Xingyue is a PhD student supervised by Prof. Moriaki Yasuhara and Prof. David Baker. Her research focuses on understanding how marine ecosystems responded to historical climate variations over long time scales.

Abstract:

The Western Pacific Warm Pool (WPWP) is a pivotal thermal engine of the global climate system and a primary center of marine biodiversity, significantly overlapping with the Coral Triangle—the world's most biodiverse coastal marine realm. However, both the region's deep-sea biodiversity and its long-term ecological dynamics remain poorly constrained. Understanding these historical responses is essential to provide critical insights into future biological shifts under anthropogenic warming scenarios. This research utilizes fossil Ostracoda—small bivalved crustaceans with well-calcified shells—as a proxy to reconstruct deep-sea benthic community dynamics across different Quaternary time scales.

The study is structured to address whether and how deep-sea biota responded to glacial-deglacial climatic events through a multi-stage approach. Chapter 1 investigates a 40,000-year high-resolution record to evaluate ecosystem sensitivity to millennial-scale abrupt deglacial events. Chapter 2 expands this perspective to a longer time scale for the past 500,000 years, focusing on orbital climate cycles and major Pleistocene milestones such as the Mid-Brunhes Event (MBE). Chapter 3 provides a long-term evolutionary framework covering the last 1.5 million years to track the stability and turnover of deep-sea ecosystems throughout the Quaternary.