



**Międzynarodowa Środowiskowa Szkoła Doktorska  
przy Centrum Studiów Polarnych  
w Uniwersytecie Śląskim w Katowicach**

ul. Bedzińska 60  
41-200 Sosnowiec  
tel. +48 32 368 93 80  
polarknow@us.edu.pl  
www.mssd.us.edu.pl



**No. of PhD project: IEDS/2023/IO/01**

**Title of PhD project: *The impact of past environmental changes on foraminiferal inorganic carbon burial at the northern European continental shelf***

**The leading unit:** Institute of Oceanology, Polish Academy of Sciences (IO PAN), Sopot

**Requirements:**

1. The applicant must have completed an MSc degree in oceanography, Earth sciences, natural sciences or a related discipline.
2. Experience in laboratory work (e.g. foraminifera analysis, geochemical analyses).
3. Manuscript writing experience would be advantageous.
4. An excellent level of spoken and written English is essential.
5. The candidate's application should show how the knowledge and experience will help succeed in this position.

**Tasks description:**

1. Preparation of marine sediment samples for foraminifera and geochemical analyses.
2. Analysis of planktic and benthic foraminifera.
3. Preparation of foraminifera for radiocarbon analysis.
4. Stable isotope analyses.
5. Sortable silt grain-size analysis.
6. Age-depth modelling.
7. Communicate results through oral presentations, scientific journal articles.
8. Preparation of progress reports.
9. Assistance in the daily scientific tasks of the scientific team and care of the equipment.
10. The graduate student will need to participate in sampling expeditions (cruises in the Northern Atlantic Ocean).

**Abstract:**

Understanding how past environmental changes effected the foraminiferal assemblages during the late Weichselian and Holocene can provide valuable insights into the relationship between the environment and inorganic carbon burial in the sediments. This research could potentially contribute to explanation of the climate change impact on marine ecosystems and its future conservation efforts. The project is highly multidisciplinary and collaborative. The main goal is to determine the relationship between post glacial oceanographic changes and carbon fluxes in the North Atlantic region. To achieve this, the project utilizes two approaches: the analysis of sediments and the analysis of fossil



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foraminifera record. The combination of the two approaches will allow us to trace the changes in the environment and the resulting changes in foraminifera species composition, foraminifera morphology, foraminifera shell chemistry, foraminifera size and shell thickness. These results will allow us to establish the relationship between changes in oceanography and the amount of inorganic carbon buried in the sediment. Numerous studies point to a lack of understanding of inorganic carbon sinks and sources. At the same time recent studies published by the Department of Paleoceanography prove that foraminifera are an important source of inorganic carbon in glaciomarine sediments. The project will fill the gaps in knowledge on inorganic carbon burial as well as the role of foraminifera play in the process.

**Other information:**

The work will be carried out under supervision of: prof. dr hab. Marek Zajączkowski, e-mail: [trapper@iopan.pl](mailto:trapper@iopan.pl), Institute of Oceanology of the Polish Academy of Sciences in Sopot.

Secretary of the IEDS Recruitment Committee: +48 32 3689 380, e-mail: [polarknow@us.edu.pl](mailto:polarknow@us.edu.pl)

Information on the IEDS admissions: [https://www.mssd.us.edu.pl/en/admission\\_2023\\_2024-reg/](https://www.mssd.us.edu.pl/en/admission_2023_2024-reg/)