



Danish National Research Foundation

Danish Center for Hadal Research

HADAL

Highlight summery 2020

The vision of Danish Center for Hadal Research (HADAL) is to explore life and biogeochemistry in one of the most remote, extreme, and scantily explored habitats – the deepest oceanic trenches on Earth. With pioneering developments of deep-sea observatories, autonomous *in situ* instrumentation and high-pressure experiments, we will: **i)** investigate how material, is transported and deposited in hadal trenches, **ii)** unravel how life decomposes organic matter and cycles elements and nutrients in hadal settings, and **iii)** explore the composition and function of the biological communities, dominated by microbes and meiofauna, that flourish at great depth. By comparing trenches from contrasting oceanic settings the center will provide a novel generic analysis of hadal biogeochemistry and the role of deep trenches in the oceans, as well as fundamental new insights to the composition and functioning of microbial communities at extreme pressure. Highlights from 2020 include:

Inauguration and first workshop of Hadal

Hadal was initiated by September 1, 2019. This was celebrated at a virtual opening event November 13 that included more than 100 invited people from across the globe. The event was followed by a two-days scientific workshop with a series of invited speakers and virtual group discussions. The meeting was successful and seeded strong interactions and engagements between HADAL associates and international collaborators.

Recruitments initiated

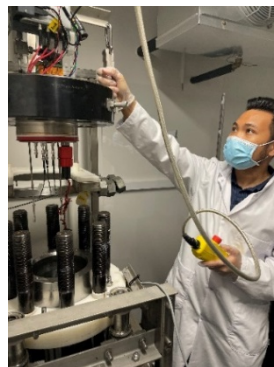
During the first 4 months of the center, support staff, post docs and senior researchers have been recruited. A process that will continue in 2021 with the engagements 8-10 PhD students and postdocs.

Establishment of critical Research infrastructure

During autumn 2020, a 200 m² hall for the development, construction, and service of deep-sea instrumentation has been established. Furthermore, a sophisticated tank for investigating effects of hydrostatic pressure on life processes and microbial interactions has been completed. The facility represents the first stage of establishing a series of specially designed high-pressure systems for investigating the effects of extreme pressure on enzyme kinetics, redox processes, metabolism, biological interactions and microbial evolution.



Engineering assistant Morten A Kieler, mounting components on a tripod lander frame in the newly established "lander hall".



Postdoc John Paul Balmonte placing the lid with optical sensors on the pressure chamber before the next incubation in the rotating tank (right).

