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Case Study

Hitachi's FE-SEM SU8600 Enables Marine Research Excellence at ICM-CSIC, Barcelona



MILEXIA
MAKING ACCESS TO TECHNOLOGY EASIER

Institut de Ciències del Mar



Background

The Instituto de Ciencias del Mar (ICM-CSIC), part of the Spanish National Research Council, is a world-leading multidisciplinary marine research centre based in Barcelona. The institute conducts pioneering studies on marine ecosystems, ocean–climate interactions, and the sustainable use and conservation of marine life.

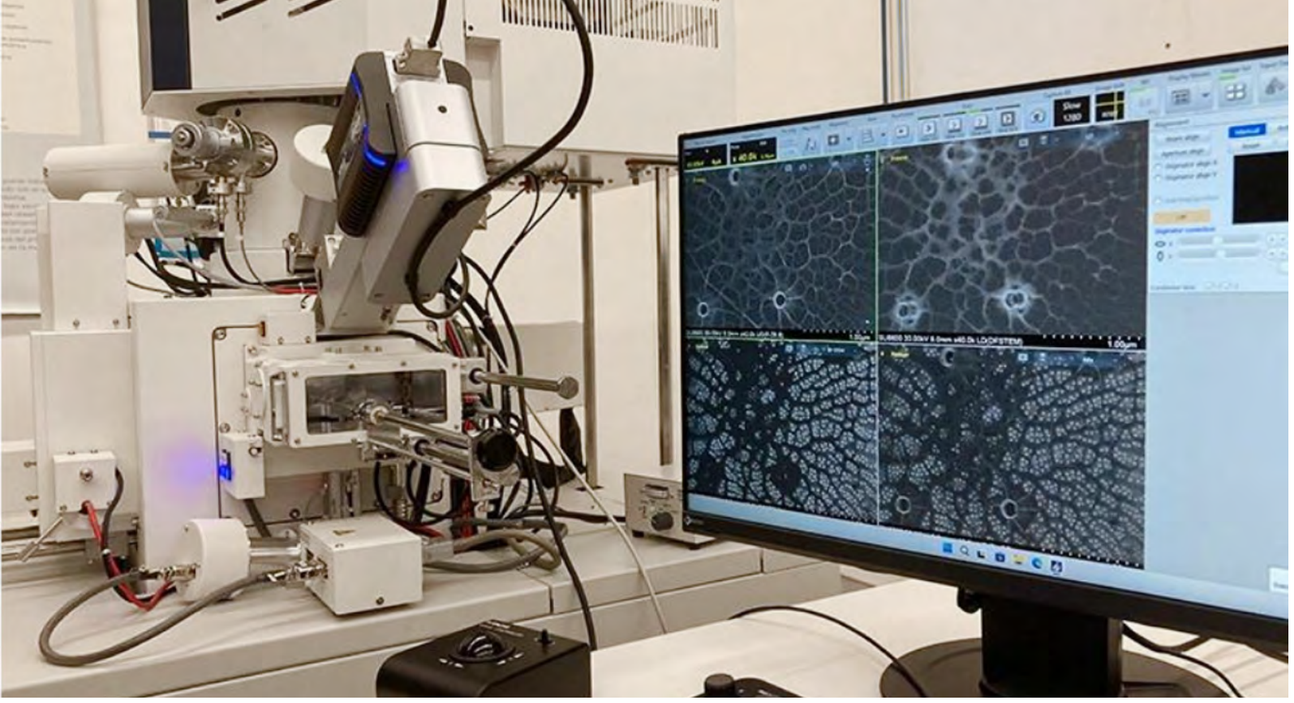
The Electron Microscopy Service at ICM-CSIC supports diverse research projects analysing biological samples of marine origin - including planktonic and benthic organisms, crustaceans, cephalopods, and fish.

As research at the institute advanced, the need for a high-performance Field Emission Scanning Electron Microscope (FE-SEM) became essential to capture ultra high resolution images at low acceleration voltages and enable in-depth study of micro and nanoscale marine life

Objectives

- Improve imaging resolution and contrast for delicate biological samples.
- Enable detailed observation of nanoplankton, including viruses and bacteria.
- Integrate advanced detectors and analytical tools for multidisciplinary research.
- Provide comprehensive training and system support to ensure long-term performance.

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Solution

To meet these needs, ICM-CSIC selected Hitachi's FE-SEM SU8600, installed in collaboration with Milexia Ibérica, Milexia France – Instrumentation Scientifique, Hitachi High-Tech Europe GmbH, and Bruker.

The configuration included a suite of advanced options:

- EM Flow Creator for workflow optimisation
- PD-STEM Darkfield Detector and HD Capture Image
- EDX Bruker dual detector XFlash 730
- Hitachi ZoneSEM II (UV sample cleaning)
- Quorum Q150T ESPlus sputter coater with dual Cr/Ir targets and C turboevaporator

After successful installation and setup, the Hitachi and Milexia teams delivered tailored user training, followed by advanced sessions covering practical applications with ICM-CSIC's marine samples.



José Manuel Fortuño and **Mariona Segura**
ICM-CSIC researchers

"The Hitachi SU8600 FE-SEM allows us to obtain ultra-high-resolution images while minimising sample damage. Its versatility and detector options represent a major qualitative advance in our study of marine nanoplankton and bacteria - crucial for understanding toxic species and marine ecosystems."

The installation of the SU8600 FE-SEM has provided ICM-CSIC researchers with a major leap forward in imaging and analysis capability.

Results

- Ultra-high-resolution imaging at low voltages and minimal beam current
- Precise observation of marine nanoplankton, viruses, and bacteria
- Enhanced morphological description and chemical microanalysis of small prokaryotes
- Accelerated, high-quality multidisciplinary research

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