

Facilities,  
Equipment and  
Expertise

## Who we are

The Southampton Marine and Maritime Institute (SMMI) is a unique internationally recognised centre of excellence bringing an interdisciplinary approach to tackling the most pressing challenges that face the marine environment and maritime industries today. We have 1000+ researchers working on cutting edge maritime projects, all with a passion to change the world through their global research collaborations with business, civic and industrial societies.

The University of Southampton has a rich history of marine research and innovation. With over 60 years of maritime experience behind us, the SMMI was officially launched in 2012, in collaboration with Lloyd's Register. Our wide network is bringing benefit to the local, national, and international maritime economy. We support research collaboration and knowledge partnerships, providing access to expertise, laboratories and test facilities contributing to a growing maritime innovation cluster.

## Working with you

We seek industry partners to come forward with research proposals and engage with us about using our facilities, equipment and accessing our expertise. Whether it's for accessing new skills, assistance with research and development or an immediate business-critical consultancy need, our expertise and facilities are accessible to the world's business community and all charities and heritage-based organisations with a maritime focus.

This directory contains information about all of the slides on display at Ocean Business. You can find subject title, a summary and contact details. If you can't find what you're looking for please ask at the stand or contact Dr Simon Gerrard whose contact details are on the back cover.

# FACILITIES

TITLE	SUMMARY	CONTACT
<b>Towing Tank</b>	Our newest world class facility is 138m long, 6m wide and 3.5m deep with a high speed carriage and capability of producing a full range of unidirectional seastate simulations. It is ITT accredited with a comprehensive range of sensors.	Professor Stephen Turnock s.r.turnock@southampton.ac.uk T: +44(0)23 8059 2488
<b>Testing and Structures Laboratory</b>	Addresses microstructure-property relationships, material-structure synthesis, design production coupling and fluid-structure interactions.	Professor Janice Barton Janice@southampton.ac.uk T: +44(0)23 8059 6522
<b>Multidisciplinary, Multiscale, Microtomographic Volume Imaging</b>	The centre incorporates five advanced X-ray computed tomography systems able to produce high resolution 3D images of the internal structure of objects.	Professor Ian Sinclair I.Sinclair@southampton.ac.uk T: +44(0)23 8059 5095
<b>High Voltage Laboratory</b>	State-of-the-art facility for research into dielectric materials and insulation systems, as well as high voltage and related phenomena.	Professor Paul Lewin p.l.lewin@southampton.ac.uk T: +44(0)23 8059 3586
<b>Wind Tunnel</b>	Extensively equipped with a 3.6m x 2.5m working section, with moving ground and a maximum wind speed of 40m/s.	Dr Dave Marshall Dwm101@southampton.ac.uk T: +44(0)23 8059 2129
<b>Anechoic Doak Laboratory</b>	Approximately 15m x 7m x 5m high and is fully anechoic down to 400 Hz. Used for jet and valve noise and equipped with an air supply that can achieve up to 20bar pressure.	Institute of Sound and Vibration isvr@southampton.ac.uk T: +44(0)23 8059 2162
<b>Human Factors Laboratory</b>	This unit contributes to many of the current standards for measuring, evaluating and assessing vibration.	Professor Mike Griffin M.J.Griffin@southampton.ac.uk T: +44(0)23 8059 2448
<b>Tribology Laboratory</b>	Enabling surface interactions to occur with minimal energy loss and impact on the environment our multidisciplinary tribology centre is developing sensors and novel probes for tribological processes.	Professor Robert Wood rjw3@southampton.ac.uk T: +44(0)23 8059 4881
<b>Coral Reef Laboratory</b>	Using advanced mesocosm facilities and molecular approaches to understand the impact of climate change on coral reef ecosystems.	Professor Joerg Wiedenmann J.Wiedenmann@southampton.ac.uk T: +44(0)23 8059 6497

<b>Operational Research, Management Sciences and Information Systems</b>	With a strong focus on supply chain logistics this team of internationally-renowned experts in specific areas of risk, optimisation, finance and health covers the whole spectrum of current Operational Research, Management Science and Information Systems from theoretical mathematical developments to problem structuring and knowledge management.	Dr Ian Rowley I.T.Rowley@southampton.ac.uk T: +44(0)23 8059 2438
<b>Coastal and Offshore Archaeological Research Services</b>	Archaeological services for the maritime community. Specialists in marine geophysics, geoarchaeology and the study of maritime material culture.	COARS coars@southampton.ac.uk T: +44(0)23 8059 9610
<b>Marine Technology and Industrial Aerodynamics</b>	This world-renowned Unit offers model testing, CFD, consultancy and software services to a wide customer base.	Wolfson Unit wumtia@southampton.ac.uk T: +44(0)23 8058 5044
<b>Scanning Electron Microscopy Facility</b>	Services include high resolution imaging and micro area chemical analysis.	Dr Richard Pearce R.B.Pearce@southampton.ac.uk T: +44(0)23 8059 6477/6518
<b>Carbon Laboratory</b>	<p>Isotope analysis and organic geochemistry.</p> <p>Stable Isotope Analysis of Carbonate &amp; Water including the precise determination of carbon and oxygen isotope ratios, palaeoclimatology, oceanography, and mineralization (e.g., carbon sequestration).</p> <p>Organic Carbon Isotope Analysis including carbon, nitrogen, and sulphur isotope ratio analysis.</p> <p>Chromatography &amp; Compound Specific Stable Isotope Analysis using state-of-the-art instrumentation for organic compound identification and compound-specific carbon, hydrogen, nitrogen stable isotope ratio analysis</p> <p>Analytical support for research on carbon cycling in marine and freshwater systems, ecosystem trophic structure, landscape evolution, hydrological cycling, and environmental pollution.</p>	<p>Dr Jessica Whiteside j.whiteside@southampton.ac.uk T: +44(0)23 8059 3199</p> <p>Dr Steve Bohaty S.Bohaty@noc.soton.ac.uk</p> <p>Prof Paul Wilson paul.wilson@noc.soton.ac.uk</p>
<b>Palaeomagnetism and Environmental Magnetism Research Facility</b>	State-of-the-art instruments for fast and precise analysis of natural and lab-induced magnetizations in marine and lake sediment.	Dr. Chuang Xuan c.xuan@southampton.ac.uk T: +44(0)23 8059 6401

<b>Maritime Robotics Laboratory</b>	Developing the next generation of maritime robotics systems.	Dr Jon Downes Jon.downes@southampton.ac.uk T: +44(0)23 8059 4654
<b>Biodiversity and Ecosystem Futures Facility</b>	Unraveling the coupling between natural and human induced forcing.	Professor Martin Solan m.solan@southampton.ac.uk M: 07500 606392
<b>Autonomous Vehicle Control Systems Laboratory</b>	Our lab merges all our research and development of intelligent control systems for autonomous vehicles.	Professor Jim Scanlan J.P.Scanlan@southampton.ac.uk T: +44(0)23 8059 2369
<b>Research Vessels</b>	Ranging from 7.00 to 19.75m, three vessels available for fieldwork and coastal, shelf and local water research.	Gary Fisher G.J.Fisher@southampton.ac.uk T: +44(0)23 8059 6172

## PROJECTS

TITLE	SUMMARY	CONTACT
<b>Global Iceberg Forecasting</b>	Using state-of-the-art global models to forecast iceberg tracks and impacts, from days to decades.	Professor Robert Marsh Rm12@southampton.ac.uk T: +44(0)23 8059 6214
<b>Fish Ecology</b>	Providing the science base for sustainable fisheries.	Dr Clive Trueman C.N.Trueman@southampton.ac.uk T: +44(0)23 8059 6571
<b>Ocean-bottom Instrumentation</b>	Seismic and Electromagnetic multi-sensor versatile seabed instruments to enable sub-surface geophysical imaging at high vertical and lateral resolution. Services offered include active and passive seismic acquisition, EM acquisition, survey design and data analysis.	Dr Tim Henstock then@southampton.ac.uk T: +44(0)23 8059 6491
<b>Geochemical Sample Analysis</b>	Chemical analysis and interpretation on a wide range of sample materials. Facilities support research activity across the University, through external partnerships and for commercial clients.	Dr J Andy Milton Jam1@southampton.ac.uk T: +44(0)23 8059 2169  Professor Martin Palmer Mrp1@southampton.ac.uk T: +44(0)23 8059 6607
<b>Clean Carbon: Carbon Capture and Storage</b>	<p>The research at Southampton explores various aspects of geophysical experimentation and computational modelling for underground storage of carbon dioxide. Our particular goal is to evaluate the potential for storing carbon in the subseafloor (seep-sea basalts and peridotites), in order to determine the constraints on the applicability of the injections.</p> <p>Monitoring CO<sub>2</sub> leakage is a critical element of developing a sustainable CCS solution.</p>	Professor Jon Bull bull@southampton.ac.uk T: +44(0)23 8059 3078
<b>Controlled Source Electromagnetics</b>	Seabed logging for subsurface resistivity.	Professor Tim Minshull T.A.Minshull@southampton.ac.uk T: +44(0)23 8059 6569
<b>3D Chirp System</b>	Ultra-high-resolution 3D imaging.	Dr Justin Dix jkd@southampton.ac.uk T: +44(0)23 8059 3057

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<b>Scour Analysis</b>	Time lapse analysis of scour evolution; CFD modelling of scour development; Substrate controls on scour development.	Dr Justin Dix jkd@southampton.ac.uk T: +44(0)23 8059 3057
<b>HD Cables in the Marine Environment</b>	Controls of marine environment on HV cable performance via numerical modelling, physical tank experiments and field experiments – deployment of 3D Chirp.	Dr Justin Dix jkd@southampton.ac.uk T: +44(0)23 8059 3057
<b>Sustainable Aquaculture</b>	Working with Pacific oysters in UK waters to explore how environmental conditions restrict naturalisation. Escape gaps for lobster & crab fisheries	Dr Antony Jensen acj@southampton.ac.uk T: +44(0)23 8059 3428
<b>Next Generation Bio-fuels</b>	Improving photosynthesis for algal biofuels: toward a green revolution.	Dr Tom Bibby tsb@southampton.ac.uk T: +44(0)23 8059 6446
<b>Estuarine Sediment Sequences</b>	Sedimentology of a tidal bar within the fluvial-marine transition.	Professor Paul A Carling P.A.Carling@southampton.ac.uk T: +44(0)23 8059 2214
<b>Failed Production Tool</b>	Tribological failure investigation of a production tool.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
<b>Metal Composite Coatings</b>	Environmental friendly metal composites for the replacement of chromium coatings.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
<b>Materials Testing</b>	Qualification of polyurethane PUR foams for a floating LNG platform.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
<b>Fractured Propeller</b>	Catastrophic fracture in ship propellers.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348

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<b>Risk Management of Boat Launch</b>	Lifting analysis and load test of a hook foundation in a GRP vessel.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
<b>Worm Gear Failure</b>	Tribological investigation of worm gears in actuators.	Dr Wendell Bailey E : wosb@southampton.ac.uk T: +44(0)23 8059 3348
<b>Composites</b>	Composite cabin development for cruise ships to lightweight vessel.	Dr Steve Boyd s.w.boyd@southampton.ac.uk T: +44(0)23 8059 2375
<b>Electronics and Electrical Engineering</b>	Energy efficient power transmission, smart grids, mobile phone electronics, communications, robotics, power electronics, and energy aware electronics and computing.	Professor Alun S Vaughan asv@ecs.soton.ac.uk T: +44 (0)23 8059 3398
<b>Fast Craft Simulator</b>	Determining if the level of boat driving expertise has an effect on interpreting oncoming waves, the use of the throttle and resulting boat speed.	Dr James IR Blake j.i.r.blake@southampton.ac.uk T:+44(0)23 8059 9544
<b>Naturally Derived Composites: Greenboat Project</b>	Working with industry to alleviate their concerns over the use of naturally derived composites.	Dr James IR Blake j.i.r.blake@southampton.ac.uk T:+44(0)23 8059 9544
<b>Maritime Robotics</b>	Radical innovation for agile and persistent AUVs intended for fast, safe close-up work in sensitive environments.	Dr Gabriel D Weymouth G.D.Weymouth@southampton.ac.uk T: +44(0)23 8059 2168
<b>Bubble Acoustics</b>	Developing bubble technology for uses ranging from discovering unexploded mines in bubbly seawater to tracking undersea gas leaks.	Professor Tim Leighton T.G.Leighton@southampton.ac.uk T: +44(0)23 8059 2331
<b>Biodiversity</b>	Eco-sensitive design of sea defences.	Professor Stephen J Hawkins S.J.Hawkins@southampton.ac.uk T: +44(0)23 8059 2331
<b>Marine Geophysics</b>	Over 20 years' experience collecting, analysing and reporting high resolution geophysical data.	COARS coars@southampton.ac.uk T: +44(0)23 8059 9610



<b>Geoarchaeological Investigations</b>	Extensive experience in undertaking and coordinating both onshore and offshore geoarchaeological investigations.	COARS coars@southampton.ac.uk T: +44(0)23 8059 9610
<b>Hinckley Point C Power Station</b>	Integrated geophysical, geotechnical and archaeological survey data.	COARS coars@southampton.ac.uk T: +44(0)23 8059 9610
<b>Coastal Challenges in the 21<sup>st</sup> Century</b>	Sea level rise and coastal flooding.	Shari Gallop S.Gallop@southampton.ac.uk T: +44(0)23 8059
<b>Hybrid Cargo Shipping</b>	Working with Lloyd's Register and B9 Shipping to develop 100% renewably powered commercially and technically viable sailing hybrid cargo ships.	Wolfson Unit wumtia@southampton.ac.uk T: +44(0)23 8058 5044
<b>Turning research into new products</b>	Knowledge Transfer Partnerships – direct collaboration between a company and the University (CJR Propulsion).	Dr Phil Jewell pej@southampton.ac.uk T: +44(0)23 8058 3585
<b>Next Generation of Satellite Sensors</b>	Helping the European Space Agency (ESA) to monitor key environmental markers to develop algorithm for two satellites.	Dr Jadu Dash J.Dash@southampton.ac.uk T: +44(0)23 80 59 2203
<b>Delphin 2</b>	Multifunctional AUV for detailed surveys, including energy harvesting technology.	Dr Nick Townsend N.C.Townsend@southampton.ac.uk
<b>Novel electrical packaging manufacturing techniques</b>	Recent advances in manufacturing techniques have opened up many new opportunities for improving electrical package design. Technologies such as: 3d printing (AKA rapid prototyping or solid freeform fabrication), laser welding, laser drilling and new metal deposition techniques. Fully-functional prototypes can be designed and built in hours, rather than days or weeks, with vastly superior performance in terms of mechanical, thermal, environmental and design properties.	Professor John McBride J.W.Mcbride@southampton.ac.uk 02380 592895

<b>Microsystems for sustainable development</b>	Micro-electro-mechanical systems (MEMS), also known as Microsystems or Micromachines, encompass a broad range of miniaturised components. MEMS products have been successfully commercialized for a variety of applications, including motion sensing, pressure sensing, electrical/optical switching and chemical detection.	Professor John McBride J.W.Mcbride@southampton.ac.uk 02380 592895
<b>Photonics Foundry</b>	Our Foundry is a hub for innovation in photonics science and technology offering over 730m2 of state-of-the art clean room facilities and related labs.	Dr Tom Carr Tjc1v11@southampton.ac.uk 02380 599506
<b>Intelligent Agent Technology Systems</b>	Agent technology underpins the decentralised control mechanisms allowing teams of autonomous platforms to operate in dynamic environments while flexibly interacting with human operators.	Professor Alex Rogers acr@ecs.southampton.ac.uk 02380 599008
<b>Structronics and UAV Skunkworks</b>	Production of “intelligent” 3D parts whereby structures can be produced containing sensors and electronic components (commonly called “structronics”).	Professor Jim Scanlon J.P.Scanlan@southampton.ac.uk 02380 592369
<b>Statistical Science</b>	Modelling variations within large and complex datasets to generate meaningful information.	Professor Steven Gilmour S.Gilmour@southampton.ac.uk 02380 593671
<b>Geoengineering of the Climate</b>	Developing a fast but realistic computer model of the Earth’s climate systems that can simulate changes over thousands of years.	Professor John Shepherd jgs@noc.southampton.ac.uk 02380 596296
<b>Integrated Optical Network Sensors</b>	Our optical sensors offer lightweight and highly sensitive solutions to a wide range of sectors.	Dr Chris Holmes chh@southampton.ac.uk T: +44(0)23 8059 4532
<b>Hand and Wrist Kinematics</b>	New system for reliably assessing and benchmarking complex tasks for use in the design process.	Dr Cheryl Metcalf C.D.Metcalf@southampton.ac.uk T: +44(0)23 8059 8927
<b>Next Generation Biofuels</b>	Exploring what nature has given us and how we can improve photosynthesis using systems and synthetic biology.	Professor Gail Taylor G.Taylor@southampton.ac.uk 02380 592335

<b>Micro Wind Turbines</b>	Our researchers are influencing the UK policy on micro-wind turbine installation.	Professor AbuBakr Bahaj A.S.Bahaj@soton.ac.uk T: +44(0)23 8059 2051
<b>Performance Sports Engineering</b>	We have been working with America's Cup teams since the early 1980's and have assisted British cycling and various Olympians.	Professor Stephen Turnock s.r.turnock@southampton.ac.uk T: +44(0)23 8059 2488
<b>Mapping the Underworld</b>	Single shared multi sensor platforms as a means to locate, map in 3-D and record positions of all buried utility assets without excavation.	Dr Jen Muggleton jmm@isvr.southampton.ac.uk T: +44(0)23 8059 7624
<b>Marine Composites</b>	Data-rich experimental approaches to composite materials, structural performance and tolerance to damage.	Dr James Blake J.I.R.@southampton.ac.uk T: +44(0)23 8059 9544
<b>Partnership with Lloyd's Register</b>	Working with Lloyd's Register, having created a £124m world leading Centre of Excellence on our Boldrewood Campus, and at the heart of the Solent Maritime Cluster.	Professor Ajit Sheno R.A.Sheno@southampton.ac.uk T: +44(0)23 8059 2356

## STUDENT DESIGN PROJECTS

TITLE	SUMMARY	CONTACT
<b>Student Designed Oil Tanker</b>	Students testing their oil tanker group project at the local ship handling centre.	Sue Smith S.B.Smith@southampton.ac.uk 02380 592316
<b>Student Designed Flood Gate</b>	Students building a domestic flood gate as part of their group design project.	Sue Smith S.B.Smith@southampton.ac.uk 02380 592316
<b>Transatlantic Autonomous Surface Vessels</b>	Student project over a period of years to develop an ASV that can cross the Atlantic.	Professor Stephen Turnock s.r.turnock@southampton.ac.uk T: +44(0)23 8059 2488

**Dr Simon Gerrard**  
**Industry Liaison Manager**  
**Southampton Marine and**  
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