



UNIVERSITY OF
Southampton

Facilities,
Equipment and
Expertise

SMMI Southampton Marine
and Maritime Institute



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 acquiring 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 provides a selection of the diverse projects undertaken related to the marine and maritime environment and the breadth of expertise available to you. If you can't find what you're looking for please contact us.

TITLE	SUMMARY	CONTACT
Anechoic Doak Laboratory	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 Research isvr@southampton.ac.uk T: +44(0)23 8059 2162
Autonomous Vehicle Control Systems Laboratory	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
Biodiversity and Ecosystem Futures Facility	Unraveling the coupling between natural and human induced forcing.	Professor Martin Solan m.solan@southampton.ac.uk M: 07500 606392
Carbon Laboratory	Isotope analysis and organic geochemistry. Carbon sequestration. Analytical support for research on carbon cycling in marine and freshwater systems, ecosystem trophic structure, landscape evolution, hydrological cycling, and environmental pollution.	Dr Jessica Whiteside j.whiteside@southampton.ac.uk T: +44(0)23 8059 3199 Dr Steve Bohaty S.Bohaty@noc.soton.ac.uk Professor Paul Wilson paul.wilson@noc.soton.ac.uk
Coastal and Offshore Archaeological Research Services	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
Coral Reef Laboratory	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
High Voltage Laboratory	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
Human Factors Laboratory	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 2277
Maritime Robotics Laboratory	Developing the next generation of maritime robotics systems.	Dr Jon Downes Jon.downes@southampton.ac.uk T: +44(0)23 8059 4654

TITLE	SUMMARY	CONTACT
Multidisciplinary, Multiscale, Microtomographic Volume Imaging	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
Operational Research, Management Sciences and Information Systems (CORMSIS)	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.	Professor Huifu Xu h.xu@southampton.ac.uk T: +44(0)23 8059 3657
Organic Geochemistry Facility	The new facility is housed in a purpose built laboratory spaces and hosts a variety of new instruments designed to comprehensively characterize organic matter from the environment and the geological record.	Dr Jessica Whiteside j.whiteside@southampton.ac.uk T: +44(0)23 8059 3199
Palaeomagnetism and Environmental Magnetism Laboratory	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
Research Aquarium	Multi-use research aquarium with a variety of tanks and facilities for keeping and handling live specimens. We have recently had a £100,000 refurbishment that has allowed us to incorporate new seawater tanks, cooling systems and better security systems.	Mr Robbie Robinson R.J.Robinson@southampton.ac.uk T: +44(0)23 8059 6047
Research Vessels	Ranging from 7.00 to 19.75m, three vessels available for fieldwork and coastal, shelf and local water research.	Mr Gary Fisher G.J.Fisher@southampton.ac.uk T: +44(0)23 8059 6172
Scanning Electron Microscopy Facility	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

TITLE	SUMMARY	CONTACT
Testing and Structures Laboratory	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
Towing Tank	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 sea state 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
Tribology Laboratory	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.	Dr Tomas Polcar T.Polcar@southampton.ac.uk T: +44(0)23 8059 8615
Wind Tunnel	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
Wolfson Unit	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



KEY AREAS OF EXPERTISE

The colour key below provides the code to the KEY AREAS of expertise listed in the following pages of this directory

KEY	PAGE	AREA
■	7	BIG DATA & CYBERSECURITY
■	8	IMPACT, CULTURE & HERITAGE
■	9-10	ENERGY & RESOURCES
■	11-12	MATERIALS, STRUCTURES & TESTING
■	13	ENVIRONMENT MODELLING & MAPPING
■	14	ROBOTICS & AUTONOMOUS SYSTEMS
■	15	VESSEL DESIGN & PERFORMANCE

TITLE	SUMMARY	CONTACT
Next generation of satellite sensors	Helping the European Space Agency (ESA) to monitor key environmental markers to develop algorithms for two satellites.	Dr Jadu Dash J.Dash@southampton.ac.uk T: +44(0)23 80 59 2203
Photonics and Nanotechnology	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 T: +44(0)2380 599506
The Future Photonics Hub	Advancing the manufacturing of next-generation light technologies.	Dr Tom Carr Tjc1v11@southampton.ac.uk T: +44(0)2380 599506
Integrated optical network sensors	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



TITLE	SUMMARY	CONTACT
Marine geophysics	Over 20 years' experience collecting, analysing and reporting high resolution geophysical data.	Dr Michael Grant coars@southampton.ac.uk T: +44(0)23 8059 9610
Nuclear new build	Supporting the maritime and terrestrial site investigations for many of the proposed new nuclear power stations in the UK	Dr Michael Grant coars@southampton.ac.uk T: +44(0)23 8059 9610
Bespoke CPD training to meet industry requirements	Practical training courses in marine geotechnical and geophysical survey for meeting archaeological conditions in offshore construction.	Dr Michael Grant coars@southampton.ac.uk T: +44(0)23 8059 9610
Setting the agenda in maritime archaeology	Provision of strategic advice and retained archaeological services on marine projects, including offshore wind, nuclear, aggregates, energy infrastructure and port development.	Dr Michael Grant coars@southampton.ac.uk T: +44(0)23 8059 9610
Submerged landscapes	At the forefront of developing new approaches in modelling and visualisation of stratigraphic data and archaeological sites	Dr Michael Grant coars@southampton.ac.uk T: +44(0)23 8059 9610
Geoarchaeology	Leaders in the analysis and interpretation of geotechnical material in order to satisfy the archaeological license conditions.	Dr Michael Grant coars@southampton.ac.uk T: +44(0)23 8059 9610
Partnership with Lloyd's Register	Working with Lloyd's Register, having created a £124m world leading Centre of Excellence on our Boldrewood Innovation 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

TITLE	SUMMARY	CONTACT
Fish ecology	Providing the science base for sustainable fisheries.	Dr Clive Trueman C.N.Trueman@southampton.ac.uk T: +44(0)23 8059 6571
Ocean-bottom Instrumentation	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
3D Chirp: High resolution subsurface imaging	Ultra-high-resolution 3D imaging.	Dr Justin Dix jkd@southampton.ac.uk T: +44(0)23 8059 3057
Scour analysis	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
HD cables in the marine environment	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
Sustainable aquaculture	Working with Pacific oysters in UK waters to explore how environmental conditions restrict naturalisation of farmed oysters.	Dr Antony Jensen acj@southampton.ac.uk T: +44(0)23 8059 3428
Next generation bio-fuels	Improving photosynthesis for algal biofuels: toward a green revolution.	Dr Tom Bibby tsb@southampton.ac.uk T: +44(0)23 8059 6446
Estuarine sediment sequences	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

TITLE	SUMMARY	CONTACT
Biodiversity	Eco-engineering of artificial coastal structures to reduce their impact on the surrounding environment.	Professor Stephen J Hawkins S.J.Hawkins@southampton.ac.uk T: +44(0)23 8059 2331
Energy conversion and management research	Electric machines; power electronic converters and smart grids; hybrid electric vehicles and underwater vehicles; battery management systems.	Professor Suleiman Sharkh S.M.Abu-Sharkh@southampton.ac.uk T: +44(0)23 8059 3397
Energy management of hybrid electrical vehicles	Research into overall vehicle energy management.	Professor Suleiman Sharkh S.M.Abu-Sharkh@southampton.ac.uk T: +44(0)23 8059 3397
Delphin 2	Multifunctional AUV for detailed surveys.	Dr Nick Townsend N.C.Townsend@southampton.ac.uk T: +44(0)23 80 59 7773
Marine energy – wave and tidal	Our researchers are leading the way in the study and development of global marine energy.	Professor AbuBakr Bahaj A.S.Bahaj@southampton.ac.uk T: +44(0)23 8059 2051



TITLE	SUMMARY	CONTACT
Research Institute for Industry	Experimental and computational experts in materials and structures.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Bespoke test rig, test method and instrumentation design.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Thermal testing at cryogenic temperatures.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Mechanical testing at cryogenic temperature.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Application of non-contact data rich digital imaging correlation (DIC) inspection techniques.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Experimental mechanics at extreme strain rates.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Finite Element Analysis (FEA).	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Computation Fluid Dynamics (CFD).	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
Research Institute for Industry	Standard testing services.	Dr Wendell Bailey wosb@southampton.ac.uk T: +44(0)23 8059 3348
nC2 Engineering Consultancy	Erosion testing.	Dr Clint Styles C.Styles@southampton.ac.uk T: +44(0)23 8059 3601
nC2 Engineering Consultancy	Abrasive and sliding testing.	Dr Clint Styles C.Styles@southampton.ac.uk T: +44(0)23 8059 3601
nC2 Engineering Consultancy	Corrosion testing.	Dr Clint Styles C.Styles@southampton.ac.uk T: +44(0)23 8059 3601
nC2 Engineering Consultancy	Material characterization.	Dr Clint Styles C.Styles@southampton.ac.uk T: +44(0)23 8059 3601

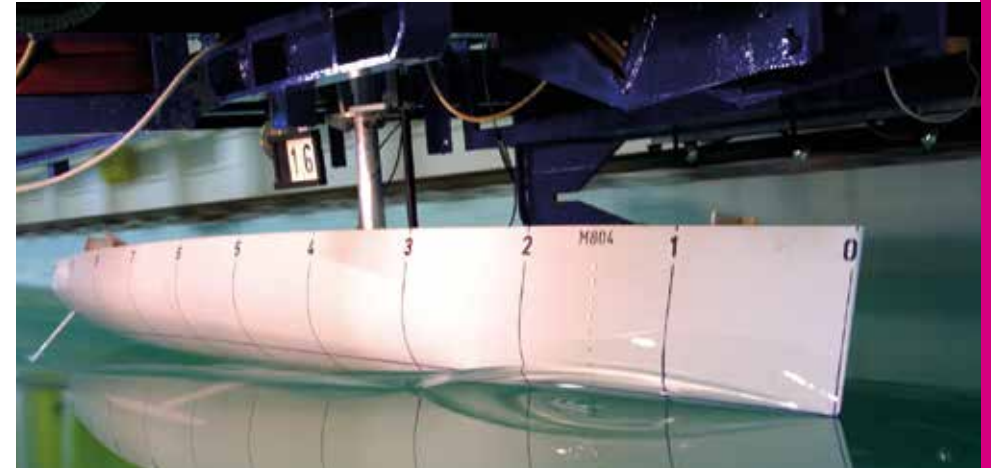
TITLE	SUMMARY	CONTACT
Sustainable materials engineering	Working with industry to explore sustainable solutions for the life cycle of structural marine composites.	Dr James IR Blake j.i.r.blake@southampton.ac.uk T: +44(0)23 8059 9544
Novel electrical packaging manufacturing techniques	Technologies such 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 Suleiman Sharkh S.M.Abu-Sharkh@southampton.ac.uk T: +44(0)23 8059 3397
Microsystems for sustainable development	Micro-electro-mechanical systems (MEMS), also known as Microsystems or Micromachines, encompass a broad range of miniaturised components.	Professor Suleiman Sharkh S.M.Abu-Sharkh@southampton.ac.uk T: +44(0)23 8059 3397
Electrical contacts and surface metrology	Electrical contact physics; instrumentation and sensors; surface metrology.	Professor Suleiman Sharkh S.M.Abu-Sharkh@southampton.ac.uk T: +44(0)23 8059 3397
Marine composites	We are at the forefront of full-field data rich experimental approaches to explain through life structural performance and damage tolerance.	Dr James Blake J.I.R.Blake@southampton.ac.uk T: +44(0)23 8059 9544
Composites	Composite cabin development for cruise ships to lightweight vessels.	Dr Steve Boyd s.w.boyd@southampton.ac.uk T: +44(0)23 8059 2375
Bubble acoustics	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
Geochemical sample analysis	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

TITLE	SUMMARY	CONTACT
Global iceberg forecasting	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
Clean Carbon: carbon capture and storage	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 (deep-sea basalts and peridotites), in order to determine the constraints on the applicability of the injections. Monitoring CO ₂ leakage is a critical element of developing a sustainable CCS solution.	Professor Jon Bull bull@southampton.ac.uk T: +44(0)23 8059 3078
Controlled source electromagnetics	Seabed logging for subsurface resistivity.	Dr Romina Gehrman R.A.Gehrman@southampton.ac.uk T: +44(0)23 8059 6468
Assessing the underworld	Using a combination of geophysical tools to assess the condition of buried pipelines and cables; the ground in which they are buried; the surface transport infrastructures beneath which they are buried.	Dr Jen Muggleton jmm@isvr.southampton.ac.uk T: +44(0)23 8059 7624

TITLE	SUMMARY	CONTACT
Maritime robotics	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
Energy harvesting systems for maritime robotics	Energy harvesting systems for maritime robotics.	Dr Nick Townsend N.C.Townsend@southampton.ac.uk T: +44(0)23 80 59 7773
Intelligent agent technology systems	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 T: +44(0)2380 599008
UAV Skunkworks	Rapid design and prototyping of small novel fixed wing and rotorcraft including DARPA winning Halo and 2SEAS EU search plane	Professor Jim Scanlon J.P.Scanlan@southampton.ac.uk T: +44(0)2380 592369
Structronics	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 T: +44(0)2380 592369



TITLE	SUMMARY	CONTACT
Fast craft simulator	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 Dominic Taunton Djt2@southampton.ac.uk T: +44(0)23 8059 3706
Turning research into new products	Knowledge Transfer Partnerships – direct collaboration between a company and the University.	Dr Phil Jewell pej@southampton.ac.uk T: +44(0)23 8058 3585
Performance sports engineering	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
Integrated rim driven thrusters and marine turbine generators	Produced commercially under license by TSL Technology Ltd.	Professor Suleiman Sharkh S.M.Abu-Sharkh@southampton.ac.uk T: +44(0)23 8059 3397
Safer Operations at Sea (SOS)	Mapping extreme forces using high fidelity current, wave and sea ice data	Dr Nikolaos Skliris N.Skliris@southampton.ac.uk T: +44(0)23 8059 5075
Hybrid cargo shipping	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





Find out more:

www.southampton.ac.uk/smmi

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