



# 15<sup>th</sup> International Congress on Marine Corrosion and Fouling

organised by Newcastle University on behalf of

Comité International Permanent pour la Recherche sur  
la Préservation des Matériaux en Milieu Marin (COIPM)

## PROGRAMME and ABSTRACTS

The Sage Gateshead  
25-29<sup>th</sup> July 2010

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# Programme

SUNDAY, 25 <sup>th</sup> JULY			
16.00-19.00	Registration (Concourse, The Sage Gateshead)		
MONDAY, 26 <sup>th</sup> JULY			
08.00-08.45	Registration (Concourse, The Sage Gateshead)		
08.45-09.00	Welcome		
09.00-09.40	26-H2-P:Plenary session (Hall Two) - Schultz: Economic impact of biofouling on a naval ship		
09.40-10.00	Refreshment break		
	Session 1 (Hall Two)		Session 2 (Barbour)
	<i>Hydrodynamics &amp; ship efficiency (Swain)</i>		<i>Biofouling in industrial cooling water systems (Bruijs)</i>
10.00-10.15	26-H2-1-1:Haslbeck: US Navy evaluation of a fouling release coating: biofouling control, physical performance, and impact on fuel economy	10.00-10.30	26-B-1-1: Rajagopal (keynote): Biofouling and its control in industrial cooling water systems: an overview of the present and a peek into the future
10.15-10.30	26-H2-1-2:Hasselaar: Investigation into the development of an advanced ship performance monitoring and analysis system		
10.30-10.45	26-H2-1-3:Yebra: Fouling control products: value proposition and associated atmospheric pollution profile	10.30-10.45	26-B-1-2: Wither: Industrial cooling water systems: discharge controls in the European Union
10.45-11.00	26-H2-1-4:Klijnstra: Rapid screening of friction drag properties	10.45-11.00	26-B-1-3: Venhius: Root-cause analyses of corrosion in heat-exchangers: a case study
11.00-11.15	26-H2-1-5: Kanar: Innovative hydrodynamic approaches for drag properties evaluation of advanced antifouling coatings elaborated in nanotechnology fields, on basis of AMBIO project results	11.00-11.15	26-B-1-4: Christiani: Monitoring by an electrochemical integrated system of corrosion and antifouling treatments on aluminum brass condenser tubes
11.15-11.30	26-H2-1-6: Atlar: Boundary layer drag and surface roughness characteristics of nanostructured coatings	11.15-11.30	26-B-1-5: Lamb: Electrolytic anti-fouling systems for pumped water intakes in the oil + gas industry

	on an axysymmetrical slender body tested in a cavitation tunnel		
11.30-11.45	<b>26-H2-1-7: Gysel:</b> The environmental benefits of surface treated coatings (STCs)	11.30-11.45	<b>26-B-1-6: Glazer:</b> Characterization of the marine organisms on artificial substrates in a power plant in the southeastern Mediterranean
11.45-12.00	<b>26-H2-1-8: Senda:</b> Drag reduction for ships due to polymer release from painted surface by Toms effect	11.45-12.00	<b>26-B-1-7: Venugopalan:</b> Biofouling in Indian nuclear power plants – an overview of problems encountered and lessons learned
12.00-12.15	<b>26-H2-1-9: Sampson:</b> Cavitation and open water performance analysis of two types of antifouling propeller coatings	12.00-12.15	<b>26-B-1-8: Macdonald:</b> Industrial Cooling Seawater in the Middle East - a case study of operation optimisation and reduced environmental impact
12.15-12.30	<b>26-H2-1-10: Swain:</b> The mechanics and hydrodynamics of fouling release coatings	12.15-12.30	General discussion
12.30-14.00	<b>Lunch</b>		
	<b>Session 3 (Hall Two)</b>		<b>Session 4 (Barbour)</b>
	<b>Regulatory and environmental (Hunter)</b>		<b>Marine bioadhesion (Wilker)</b>
14.00-14.30	<b>26-H2-2-1: Hunter</b> (keynote): Antifouling regulations – regulatory approach to minimise their impact on the environment – how far have we come since TBT?	14.00-14.20	<b>26-B-2-1: Wahl:</b> Interfacial spectroscopy: in situ approaches to understand sticky contacts
14.30-14.50	<b>26-H2-2-2: Low:</b> Current regulatory issues for antifouling products under the EU Biocidal Products Directive	14.20-14.40	<b>26-B-2-2: Aldred:</b> Imaging temporary adhesion and surface exploration by barnacle cyprids
14.50-15.10	<b>26-H2-2-3: van Hattum:</b> MAM-PEC – a generic model for environmental exposure modelling for antifouling biocides. Introduction to vs 3	14.40-15.00	<b>26-B-2-3: Rittschof:</b> Barnacle glue curing and organization of marine communities
15.10-15.30	<b>26-H2-2-4: Prowse:</b> Use of environmental modelling to assess impact of changes in copper loading from	15.00-15.20	<b>26-B-2-4: Walker:</b> Insights into the composition, morphology, and formation of the calcareous shell of

	antifoulings in Californian marinas		the serpulid <i>Hydroides dianthus</i>
15.30-16.00	<b>Refreshment break</b>		
16.00-16.20	<b>26-H2-2-5: Blanck:</b> A proposed strategy for risk assessment of antifouling combinations in paint products	16.00-16.20	<b>26-B-2-5: Stewart:</b> The Sandcastle glue of <i>Phragmatopoma californica</i>
16.20-16.40	<b>26-H2-2-6: Shibata:</b> Prediction of environmental concentration for a photo-degradable anti-fouling agents	16.20-16.40	<b>26-B-2-6: Flammang:</b> The cement of sabellariid tube-dwelling polychaetes: A complex composite adhesive material
16.40-17.00	<b>26-H2-2-7: Long:</b> Advances in understanding of copper in the environment and the impact on its regulation	16.40-17.00	<b>26-B-2-7: Elwing:</b> Adsorption and cross-linking of marine bioadhesives
17.00-17.20	<b>26-H2-2-8: Lindblad:</b> Environmental risk assessment of Metatomodine – an effective metal-free antifouling biocide	17.00-17.20	<b>26-B-2-8: Cha:</b> Mussel bioadhesion: Study using recombinant mussel adhesive proteins and their coacervated forms
17.20-17.40	<b>26-H2-2-9: Taylor:</b> Release rate of copper pyrithione from coated fish nets – comparison of results from a modified test procedure modelled after ASTM D6903	17.20-17.40	<b>26-B-2-9: Wilker:</b> Chemical insights on how marine biological materials stick
18.00-20.00	<b>Welcome reception – Discovery Museum</b> (sponsored by International Paint Ltd.) Buses leave The Sage at 17.45-18.00		
<b>TUESDAY, 27<sup>th</sup> JULY</b>			
09.00-09.40	<b>27-H2-P: Plenary session (Hall Two) – Williams:</b> Fouling Control Technology: Changes through Tyne		
09.40-10.00	<b>Refreshment break</b>		
	<b>Session 5 (Hall Two)</b>		<b>Session 6 (Barbour)</b>
	<b>A) Industry perspective (Pereira)</b> <b>B) Aquaculture (Dürr)</b>		<b>Lab/field assessments of antifouling coating technologies (Stafslie)</b>
10.00-10.15	<b>27-H2-1-1: Tomasgaard:</b> New generation of copper (I) oxide for antifouling paints	10.00-10.30	<b>27-B-1-1: Rittschof</b> (keynote): A perspective from 2 decades of academic lab and field-testing of experimental and commercial coatings
10.15-10.30	<b>27-H2-1-2: Lindblad:</b> Medetomidine – from lab bench research towards market introduction		
10.30-10.45	<b>27-H2-1-3: Yebra:</b> The	10.30-10.45	<b>27-B-1-2: Callow:</b>

	winding road to commercial products - Hempel's experience		Integration of laboratory and field testing within the AMBIO project
10.45-11.00	<b>27-H2-1-4: Risberg:</b> Water uptake of commercial antifouling coatings with binders based on trialkylsilyl acrylates or metal acrylates/ carboxylates	10.45-11.00	<b>27-B-1-3: Coutinho:</b> Testing an analogue of antifouling from a marine sponge
11.00-11.15	<b>27-H2-1-5: Touzot:</b> A point at the operation for containership	11.00-11.15	<b>27-B-1-4: Anton:</b> ECOPAINT PACA Project: Antifouling activity of biocidal compounds through bioassays and field immersion test
11.15-11.30	<b>27-H2-2-1: Dürr:</b> Biofouling pressure at European aquaculture facilities over a 2-year period	11.15-11.30	<b>27-B-1-5: Webster:</b> Correlation between lab assays and field testing results for siloxane-polyurethane fouling-release coatings
11.30-11.45	<b>27-H2-2-2: Guenther:</b> The development of biofouling on commercial salmon cage nets in Mid-Norway	11.30-11.45	<b>27-B-1-6: Teo:</b> Rapid field testing of foul-release coatings using a novel waterjet testing apparatus
11.45-12.00	<b>27-H2-2-3: Powell:</b> Innovation in aquaculture cages using copper based alloys	11.45-12.00	<b>27-B-1-7: Stafslie:</b> Rapid biological laboratory assessments of antifouling marine coating performance: their utility and relationship to static ocean immersion testing
12.00-12.15	<b>27-H2-2-4: Woods:</b> Biofouling on Greenshell™ mussel ( <i>Perna canaliculus</i> ) farms: a preliminary assessment and potential implications for sustainable aquaculture practices	12.00-12.15	<b>27-B-1-8: Salta:</b> Bioassay screening and imaging for antifouling performance of novel natural products
12.15-12.30	<b>27-H2-2-5: Filtridge:</b> Foul play or facilitation? The impact of hydroid biofouling on mussel aquaculture in Port Phillip Bay, Australia	12.15-12.30	<b>27-B-1-9: Camps:</b> A reliable marine antifouling bioassay based on in vitro adhesion: comparison of the response of five pioneer bacteria
12.30-14.00	<b>Lunch</b>		
	<b>Session 7 (Hall Two)</b>		<b>Session 8 (Barbour)</b>
	<b>New technologies to</b>		<b>General aspects of fouling I</b>



	<b>control fouling (Callow)</b>		<b>(tbc)</b>
14.00-14.30	<b>27-H2-3-1: Brennan</b> (keynote): Biomimetic microtopographies – A green, antifouling technology	14.00-14.20	<b>27-B-2-1: Zargiel:</b> Variation in diatom community structure on antifouling and fouling release coatings from three static immersion test sites in Florida
14.30-14.45	<b>27-H2-3-2: Walker:</b> Water-stable diblock polystyrene-block-poly(2-vinyl pyridine) and diblock polystyrene-block-poly(methyl methacrylate) cylindrical patterned surfaces inhibit settlement of zoospores of the green alga <i>Ulva</i>	14.20-14.40	<b>27-B-2-2: Briand:</b> What is the influence of the nature of submerged artificial surfaces on the structure of microbial biofilm communities?
14.45-15.00	<b>27-H2-3-3: Galli:</b> Macromolecular engineering of nanostructured-surface films with amphiphilic copolymers for application in marine biofouling release coatings	14.40-15.00	<b>27-B-2-3: Satheesh:</b> Extracellular polymeric substance synthesis by bacteria during adhesion on surfaces: Influence of substratum variability and environmental factors
15.00-15.15	<b>27-H2-3-4: Ober:</b> Ambiguous, amphiphilic surfaces for fouling resistant coatings	15.00-15.20	<b>27-B-2-4: Dreanno:</b> A new marine biofilm forming model: <i>Pseudoalteromonas haerens</i>
15.15-15.30	<b>27-H2-3-5: Wooley:</b> Nanoscopically-complex, amphiphilic, non-toxic antifouling marine coatings: From hyperbranched fluoropolymer-poly(ethylene glycol)-derived networks to new generation materials		
15.30-16.00	<b>Refreshment break</b>		
16.00-16.15	<b>27-H2-3-6: Majumdar:</b> Polysiloxanes with tethered quaternary ammonium salts as novel antifouling/fouling-release coatings	16.00-16.20	<b>27-B-2-5: Goodes:</b> Determination of distribution of paint additives and assessment of their leaching rates using Laser Scanning Confocal Microscopy
16.15-16.30	<b>27-H2-3-7: Jiang:</b> Development of environmentally benign, durable and effective ultra low fouling marine coatings	16.20-16.40	<b>27-B-2-6: Dobretsov:</b> Inhibition of biofouling by quorum sensing inhibitors

16.30-16.45	<b>27-H2-3-8: Scardino:</b> Novel technologies to reduce biofouling on vessels when in port	16.40-17.00	<b>27-B-2-7: Palanisamy:</b> A comparative study on the antifouling activity of Indian and Caribbean Sea grasses extracts
16.45-17.00	<b>27-H2-3-9: Wang:</b> Preparation and topography observation of faveolate microstructure surface antifouling material	17.00-17.20	<b>27-B-2-8: da Gama:</b> Antifouling activity in <i>Sargassum vulgare</i> : within-thallus variation and polyphenolic content
17.00-17.15	<b>27-H2-3-10: Jonsson:</b> A new antifouling technology based on oxygen depleted surfaces	17.20-17.40	<b>27-B-2-9: Thabord:</b> <i>Sargassum polyceratium</i> chemical and physical impact on major coral reef invertebrate recruitment in Martinique (FWI)
17.15-17.30	<b>27-H2-3-11: Dahlström:</b> Anti-barnacle effect of medetomidine in soft and hard coatings		
18.30-10.00	<b>Poster session (Northern Rock Foundation Hall)</b>		
	<b>P1: CUMBOR ET AL. :</b> EVALUATION OF HEAVY METAL AND TBT CONTAMINATION ASSOCIATED WITH SHIPPING IN MUSSELS AND SEDIMENT ALONG THE WEST COAST OF THE UK		
	<b>P2: ZHANG XIAODAN:</b> AN ANTIFOULING-PAINTS PROJECT IN CHINA AND CHINA GREEN LABELING STANDARD FOR ANTIFOULING PAINTS		
	<b>P3: SUGDEN ET AL.:</b> COMPLEX INTERACTIONS BETWEEN ABIOTIC DISTURBANCE AND SURFACE REFUGE AND SHAPE DETERMINE THE SETTLEMENT OF MARINE PROPAGULES		
	<b>P4: VON WALDEGGE:</b> VARIABILITY AND SUCCESSION OF FOULING AND CORROSION ON COATINGS AND ADHESIVES AT DIFFERENT TEST SITES IN THE GERMAN NORTH SEA		
	<b>P5: SOLOMON:</b> FOULING CONTROL : MAKING THE ECO-EFFICIENT CHOICE		
	<b>P6: PENG ET AL.:</b> EFFECT OF INHIBITING WASHES ON COATING CHARACTERS BASED ON ELECTROCHEMICAL IMPEDANCE SPECTROSCOPY		
	<b>P7: BIN ET AL.:</b> STUDY ON THE ANTI-CORROSION PERFORMANCE OF ORGANIC COATINGS UNDER SIMULATED DEEP SEA ENVIRONMENT		
	<b>P8: MESSANO ET AL.:</b> THE INFLUENCE OF MARINE MICROFOULING COMMUNITY ON THE OPEN CIRCUIT POTENTIAL BEHAVIOR OF A DUPLEX STAINLESS STEEL UNDER FIELD AND LABORATORY CONDITIONS		
	<b>P9: MCBETH ET AL.:</b> IRON-OXIDIZING ZETAPROTEOBACTERIA ASSOCIATED WITH STEEL CORROSION IN NEARSHORE MARINE ENVIRONMENTS		
	<b>P10: CHAW ET AL.:</b> FEASIBILITY STUDY OF AN AUTOMATED ONLINE CLEANING SYSTEM FOR SEAWATER HEAT EXCHANGERS		
	<b>P11: DÜRR ET AL.:</b> SILICONE COATINGS AND CLEANING - ANTIFOULING STRATEGY FOR FISH NETS AND OYSTER TRAYS		
	<b>P12: MARTIN:</b> ANTIFOULING COATINGS FOR WAR SHIPS (ACWS)		
	<b>P13: MARIMUTHU ET AL.:</b> EFFICACY OF SOFT CORAL CRUDE EXTRACTS AGAINST THE FOULER – AN ANTIFOULING APPROACH		
	<b>P14: MARANDA ET AL.:</b> EFFICACY OF AN ISOTHIAZOLIN COMPOUND AS A		

FOULING DETERRENT: RESPONSE OF A PENNATE DIATOM
<b>P15: YANG ET AL.:</b> LARVAL METAMORPHOSIS OF THE MUSSEL <i>MYTILUS GALLOPROVINCIALIS</i> LAMARCK, 1819 IN RESPONSE TO NEUROTRANSMITTER BLOCKERS AND TETRAETHYLAMMONIUM
<b>P16: THOMÉ ET AL.:</b> CHEMISTRY-DEPENDENT SURFACE CONDITIONING AND ITS IMPLICATION FOR SETTLEMENT OF SPORES OF THE GREEN ALGA <i>ULVA</i>
<b>P17: PETRONE ET AL.:</b> IN SITU ATR-IR SPECTROSCOPIC AND ELECTRON MICROSCOPIC ANALYSES OF <i>UNDARIA PINNATIFIDA</i> SPORE SETTLEMENT
<b>P18: MCMONAGLE:</b> OUTER SHIP HULL CHARACTERIZATION USING PHOTOMETRIC ANALYSIS
<b>P19: COOGAN &amp; SWAIN:</b> MACROFOULING COMMUNITIES ON FOULING RELEASE COATINGS FROM THREE STATIC IMMERSION TEST SITES IN FLORIDA
<b>P20: RAHMAN ET AL.:</b> WATERBORNE POLYSILOXANE-URETHANE-UREA FOR POTENTIAL MARINE COATINGS
<b>P21: ALDRED ET AL.:</b> EFFECTS OF SURFACE TEXTURE ON THE ATTACHMENT STRENGTH OF BARNACLES AND THEIR LARVAE
<b>P22: FINLAY ET AL.:</b> THE MAPPING OF ALGAL ATTACHMENT SITES ON MICRO-PATTERNED SURFACES
<b>P23: COOPER ET AL.:</b> KINETIC ATTACHMENT OF <i>ULVA</i> ZOOSPORES TO TOPOGRAPHICALLY MODIFIED SURFACES
<b>P24: RAMASUBBURAYAN ET AL.:</b> EVIDENCE FOR THE ANTIFOULING ACTIVITY OF SELECTED MANGROVES
<b>P25: HAYES ET AL.:</b> POTENTIAL OF MICROALGAE EXTRACTS FOR ANTIFOULING APPLICATION: PRELIMINARY RESULTS
<b>P26: VANCE &amp; THOMASON:</b> AN ENVIRONMENTALLY BENIGN METHOD FOR PREVENTING FOULING
<b>P27: XUE &amp; JIANG:</b> ZWITTERIONIC-BASED MATERIALS AS ENVIRONMENTALLY BENIGN, DURABLE AND EFFECTIVE ULTRA LOW FOULING MARINE COATINGS
<b>P28: COLAK &amp; TEW:</b> NOVEL DUALY FUNCTIONAL ZWITTERIONIC POLYMERS AND THEIR ANTI-BIOFOULING PROPERTIES
<b>P29: BRYANT ET AL.:</b> SURFACE CHARACTERISTICS OF MULTI-COMPONENT XEROGELS WITH AND WITHOUT SEQUESTERED SELENOXIDE CATALYST AND THEIR EFFECTS ON BIOFOULING
<b>P30: SOKOLOVA ET AL.:</b> ALKYL CHAIN LENGTHS AND RATIOS: FACTORS IN CREATING A XEROGEL WITH SURFACE CHARACTERISTICS SUITABLE FOR BARNACLE REMOVAL
<b>P31: GARCIA ET AL.:</b> INHIBITION OF BYSSAL THREAD FORMATION OF <i>LIMNOPERNA FORTUNEI</i> BY NATURAL PRODUCTS ISOLATED FROM THE BROWN ALGA <i>DICTYOTA DICHOTOMA</i>
<b>P32: PÉREZ ET AL.:</b> APPROACHES TO MARINE BIOFOULING CONTROL BY THYMOL BASED PAINTS
<b>P33: STUPAK ET AL.:</b> EFFECT OF THYMOL ON INVASIVE GOLDEN MUSSEL <i>LIMNOPERNA FORTUNEI</i>
<b>P34: YUNLU ET AL.:</b> NOVEL BORON CONTAINING ANTIFOULING PAINTS
<b>P35: BLIHOGUE &amp; ILAN:</b> ANTI-MICROFOULING ACTIVITY FROM MARINE SPONGE-ASSOCIATED BACTERIA
<b>P36: BLIHOGUE ET AL.:</b> ANTIFOULING ACTIVITY OF TERPENES ISOLATED FROM MARINE INVERTEBRATES

	<b>P37: ZHENG JIYONG ET AL: ANTI-DIATOM ACTIVITIES OF RESIN BASED COATINGS CONTAINING CRUDE EXTRACT OF GREEN ALGAL <i>ULVA PERTUSA</i></b>		
	<b>P38: BLIHOGUE ET AL.: ARE ALKYLPIRIDINE-BASED COMPOUNDS SUITABLE BIOCIDES FOR ANTIFOULING PAINTS?</b>		
	<b>P39: ANTON ET AL.: ECOPAINT PACA PROJECT: NEW TECHNOLOGIES OF NON-TOXIC ANTIFOULING PAINTS</b>		
	<b>P40: ARRHENIUS: COMBINED EFFECTS OF ANTIFOULANTS – SYNERGISTIC, ADDITIVE OR ANTAGONISTIC EFFECTS?</b>		
	<b>P41: WENDT ET AL.: THE EFFICACY OF ANTIFOULING BIOCIDES: A SYSTEMATIC APPROACH</b>		
	<b>P42: KANIA &amp; KANAR: MEASUREMENTS OF ROUGHNESS OF NEW ANTIFOULING COATINGS FOR SHIPBUILDING INDUSTRY ELABORATED WITHIN THE AMBIO PROJECT</b>		
	<b>P43: BENDAOU ET AL.: PHOTOSYNTHETIC SYMBIONTS OF SPONGE : CHARACTERISATION AND IMPLICATION IN THE PREVENTION OF FOULING</b>		
	<b>P44: MARIMUTHU: BIOFOULING STUDIES DURING WRECK DIVING AT GRANDE ISLAND OF GOA, WESTCOAST OF INDIA</b>		
	<b>P45: GOHAD ET AL.: VISUALIZING ADRENERGIC RECEPTORS ON THE SENSORY ORGANS OF OYSTER AND BARNACLE SETTLEMENT STAGE LARVAE</b>		
	<b>P46: GALLUS ET AL.: PRESENCE OF NMDAR1 RECEPTOR IN THE CYPRID OF <i>BALANUS AMPHITRITE</i> (= <i>AMPHIBALANUS AMPHITRITE</i>) (CRUSTACEA, CIRRIPIEDIA)</b>		
	<b>P47: THOMPSON ET AL.: NO STICKING! NITRIC OXIDE REDUCES THE ADHESION OF FOULING ALGAE</b>		
	<b>P48: HOLM &amp; HASLBECK: EFFECT OF REPEATED CLEANINGS USING MULTIPLE TOOLS ON CONDITION OF A FOULING-RELEASE COATING</b>		
	<b>P49: QUINIOU ET AL.: TESTING METHODS TO ASSESS BOTH THE EFFICACY AND ECOTOXICITY OF ANTIFOULING COATINGS</b>		
	<b>P50: SHANKAR &amp; PUNITHA: ANTIFOULING ACTIVITY OF THREE BACTERIAL STRAINS ASSOCIATED WITH MARINE SPONGE</b>		
	<b>P51: STAPATHY ET AL.: BIOFOULING AND ITS CONTROL IN THE COOLING WATER SYSTEM OF PROTOTYPE FAST BREEDER REACTOR - A TROPICAL MARINE ENVIRONMENT CASE STUDY</b>		
	<b>ADDITIONAL POSTERS IN WELCOME PACK</b>		
	<b>WEDNESDAY, 28<sup>th</sup> JULY</b>		
09.00-09.40	<b>28-H2-P: Plenary session (Hall Two) – Little: The Study of Microbiologically Influenced Corrosion in Marine Environments – A Sea Change</b>		
09.40-10.00	<b>Refreshment break</b>		
	<b>Session 9 (Hall Two)</b>		<b>Session 10 (Barbour)</b>
	<b><i>New developments in fouling-release technology (Webster)</i></b>		<b><i>Marine corrosion - materials (Little)</i></b>
10.00-10.30	<b>28-H2-1-1: Anderson</b> (keynote): Innovation in foul release: more about doing, less about dreaming	10.00-10.15	<b>28-B-1-1: Francis:</b> The performance of superduplex stainless steel in different types of seawater
		10.15-10.30	<b>28-B-1-2: Powell:</b> Long term studies of the performance

			of copper-nickel alloy sheathing for the splash zone corrosion protection of offshore structures
10.30-10.45	<b>28-H2-1-2: Lin:</b> Study on the antifouling ability improvement of silicone-based coating with poly (acrylamide-silicone)	10.30-10.45	<b>28-B-1-3: Xiaoyan:</b> Material database on corrosion control technology and protection of ocean engineering structures
10.45-11.00	<b>28-H2-1-3: Baum:</b> Foul release performance of flow point defined physical gels prepared from poly(dimethylsiloxane)	10.45-11.00	<b>28-B-1-4: Kanematsu:</b> Biofouling of chromium and nickel based materials in marine environment
11.00-11.15	<b>28-H2-1-4: Chisholm:</b> Novel, amphiphilic polysiloxane fouling-release coatings	11.00-11.15	<b>28-B-1-5: Kawakami:</b> Bacterial adhesion to copper alloyed antibacterial stainless steel surfaces
11.15-11.30	<b>28-H2-1-5: Tribou:</b> Investigation of grooming tools for ship hull coating maintenance	11.15-11.30	<b>28-B-1-6: Kanematsu:</b> Biofouling on EAF stainless steel oxidizing slag in marine environment
11.30-11.45	<b>28-H2-1-6: Murosaki:</b> Observation of barnacle settlement and growth process on soft and wet hydrogels	11.30-11.45	<b>28-B-1-7: Makama:</b> Cathodic delamination of cable connector assemblies: mechanisms, materials and testing protocols
11.45-12.00	<b>28-H2-1-7: Majumdar:</b> Novel antimicrobial, antifouling/fouling-release coatings containing quat-functional POSS compounds	11.45-12.00	<b>28-B-1-8: Bruin:</b> Using electrochemical impedance spectroscopy and microscopy for evaluation of ballast tank coating degradation by microorganisms
12.00-12.15	<b>28-H2-1-8: Webster:</b> Tough fouling-release coatings based on self-stratification	12.00-12.30	Q&A
12.15-12.30	<b>28-H2-1-9: Conlan:</b> The effect of modulus and thickness of polydimethylsiloxane coatings on the settlement and adhesion of <i>B. amphitrite</i>		
12.30-14.00	<b>Lunch</b>		
	<b>Session 11 (Hall Two)</b>		<b>Session 12 (Barbour)</b>
	<b><i>Biocidal antifouling technology (Finnie)</i></b>		<b><i>Microbiologically - influenced corrosion (Little)</i></b>
14.00-14.30	<b>28-H2-2-1: Ashmore:</b> Sea-Nine(TM) CR: a new, microencapsulated marine	14.00-14.30	<b>28-B-2-1: Johnston:</b> Biodeterioration of the RMS Titanic, microbiological

	antifouling product		assessment, 1996 to 2010
14.30-14.45	<b>28-H2-2-2: Nydén</b> (on behalf of Nordstierna): New approach to microcapsule synthesis – replacement of a hazardous chemical	14.30-14.45	<b>28-B-2-2: Rao:</b> Microbially induced localized corrosion of type 316L stainless steel in a recirculating seawater system
14.45-15.00	<b>28-H2-2-3: Nydén:</b> Release from painted surfaces: Free and encapsulated biocides	14.45-15.00	<b>28-B-2-3: Campbell:</b> Electrochemical and microbiological contributions to the corrosion of 70/30 CuNi Alloys in seawater
15.00-15.15	<b>28-H2-2-4: Backhaus:</b> Employing classical mixture toxicity concepts for the optimization of biocide combinations for antifouling paints	15.00-15.15	<b>28-B-2-4: Jeffrey:</b> The effect of sterilisation on the corroding of mild steel in coastal seawater
15.15-15.30	Q&A	15.15-15.30	Q&A
15.30-16.00	<b>Refreshment break</b>		
16.00-16.15	<b>28-H2-2-5: Jackson:</b> Development of antifouling paints for newbuildings - more than just good antifouling performance	16.00-16.15	<b>28-B-2-5: Duan:</b> Corrosion mechanism driven by marine electro-active biofilm
16.15-16.30	<b>28-H2-2-6: Bressy:</b> Aqueous-based acrylic miniemulsions: a family of seawater erodible polymers with tunable mechanical and erosion properties	16.15-16.30	<b>28-B-2-6: Miyano:</b> The study of biofilm formation and the electrochemical behavior of some metals in natural marine water
16.30-16.45	<b>28-H2-2-7: Hellio:</b> New functionalized oligoisoprenes based flexible antifouling coatings with antimicrobial properties	16.30-16.45	<b>28-B-2-7: Kumar:</b> Etching initiated corrosion of stainless steel 316L by the cement of the barnacle, <i>Amphibalanus reticulatus</i>
16.45-17.00	<b>28-H2-2-8: Pinori:</b> Post Settlement Inhibition (PSI) of barnacle growth, <i>Balanus improvisus</i> . A novel approach in marine anti-fouling control	16.45-17.00	<b>28-B-2-8: Lee:</b> Novel MIC mechanisms associated with storage of alternative fuels in marine environments
17.00-17.15	<b>28-H2-2-9: Ramotowski:</b> New, biofouling-resistant elastomers for acoustic applications	17.00-17.15	<b>28-B-2-9: Duan:</b> Application of atomic force microscopy in the study of sulfate-reducing bacteria biofilm
17.15-17.30	Q&A	17.15-17.30	Q&A
19.30-23.00	<b>Banquet (The Alnwick Garden)</b>		

	Buses leave The Sage at 18.30		
<b>THURSDAY, 29<sup>th</sup> JULY</b>			
09.00-09.40	<b>29-H2-P: Plenary session (Hall Two) – Hewitt:</b> Biofouling as a modern vector of invasions: risky behaviours and management opportunities		
09.40-10.00	<b>Refreshment break</b>		
	<b>Session 13 (Hall Two)</b>		<b>Session 14 (Barbour)</b>
	<b><i>Fouling as a vector for invasive species (Ruiz)</i></b>		<b><i>General aspects of fouling II (Swain)</i></b>
10.00-10.20	<b>29-H2-1-1: Teo:</b> Survey of sessile marine fouling organisms found on navigational buoys in Singapore's coastal waters	10.00-10.20	<b>29-B-1-1: Vance:</b> The effect of ocean acidification upon macrofouling in a temperate marina
10.20-10.40	<b>29-H2-1-2: Wendt:</b> Invasive bryozoans transported via hull fouling initiated a phase shift in a small California (USA) estuary	10.20-10.40	<b>29-B-1-2: Greco:</b> How do crabs keep their eyes clean? The synergistic antifouling approach of <i>Carcinus maenas</i>
10.40-11.00	<b>29-H2-1-3: Davidson:</b> Commercial ship biofouling as a transfer mechanism for species inoculations of the US Pacific Coast	10.40-11.00	<b>29-B-1-3: Pagett:</b> Understanding the settlement of <i>Balanus amphitrite</i> through the characterisation of glycans involved in gregariousness
11.00-11.20	<b>29-H2-1-4: Johnson:</b> Integrating antifouling strategies to minimize transport of marine invasive species by recreational boats	11.00-11.20	<b>29-B-1-4: Rosenhahn:</b> Influence of physicochemical surface properties on the settlement of spores of the green alga <i>Ulva</i> studied by three dimensional holographic tracking
11.20-11.40	<b>29-H2-1-5: Ralston:</b> The ghost of fouling communities past: evidence for carry-on effects on transplanted panels	11.20-11.40	<b>29-B-1-5: Birch:</b> Exploratory response of <i>A. amphitrite</i> cyprids on micro pillars
11.40-12.00	<b>29-H2-1-6: Thomason:</b> The relative risk of antifouling technologies for the transport of invasive species	11.40-12.00	<b>29-B-1-6: Magin:</b> A predictive model for the attachment of marine organisms to microtopographies
12.00-12.20	<b>29-H2-1-7: Campbell:</b> Slow moving barges: a risk assessment across domestic Australian borders	12.00-12.20	<b>29-B-1-7: Barlow:</b> Functional amyloid in the adhesive of the barnacle <i>Balanus amphitrite</i>
<b>END OF CONGRESS (Scientific Programme)</b> <b>See web site for post-Congress tours</b>			