

Multi-scale modelling of the structural integrity of composite materials

Monday 25 – Tuesday 26 January 2016

Organised by Dr Peter Beaumont and Professor Constantinos Soutis

THE
ROYAL
SOCIETY

DAY 1			
Multi-scale modelling & analysis: nano, micro and meso mechanics Chair: James Marrow		Physical modelling: Impact, fatigue & environmental damage Chair: Philippe Boisse	
09.00	Welcome by Royal Society & Peter Beaumont		
09.05	Karl Schulte Hierarchical analysis of the degradation of FRP under the presence of void imperfections	13.30	Ramesh Talreja Physical modelling of failure in composites under static and fatigue loading
09.30	Discussion	14.00	Discussion
09.45	Robert Young The mechanics of reinforcement by nanoplatelets	14.15	Peter Davies Environmental degradation of composites for marine structures: new materials and new applications
10.15	Discussion	14.45	Discussion
10.30	Coffee	15.00	Tea
11.00	Norman A Fleck Failure of notched composites under multi-axial loading	15.30	Phil Withers Progressive damage in composites characterised by time lapse x-ray computed tomography
11.30	Discussion	16.00	Discussion
11.45	Philippe Boisse Modelling the development of defects during composite reinforcements and prepreg forming	16.15	Anthony J Kinloch From matrix nano-phase tougheners to composite macro-properties
12.15	Discussion	16.45	Discussion
12.30	LUNCH	17.00	CLOSE
		After session talk Dr Carl Zweben String and glue – fifty years in composites	

DAY 2			
Hierarchical analysis: high fidelity simulation; virtual mechanics Chair: Peter Davies		Science of multi-functional systems: processing, fabrication, QA Chair: Karl Schulte	
09.00	James Marrow Damage in brittle composites: high fidelity simulation of microstructure effects and its experimental validation	13.30	Robert L Crane Progress in the pursuit of reliable bonded composites
09.30	Discussion	14.00	Discussion
9.45	Qingda Yang A-FEM for high fidelity multi-scale failure analysis of structural composites	14.15	Ivana Partridge Use of microfasteners to produce damage tolerant composite structures
10.15	Discussion	14.45	Discussion
10.30	Coffee	15.00	Tea
11.00	Anoush Poursartip Multi-scale characterization and representation of composite materials during processing	15.30	Tony Bunsell Limits of sustainable damage in filament wound structures under short and long-term loading revealed by multi-scale modelling
11.30	Discussion	16.00	Discussion
11.45	Carlos González Computational micromechanics of composites: a mature discipline?	16.15	Panel discussion Constantinos Soutis, Alastair Johnson, Tony Waas, Carl Zweben & Samit Roy
12.15	Discussion		
12.30	LUNCH	17.00	CLOSE

Draft programme – correct as of 17 December 2015 – subject to change