

2008 AFAS/FEAST-France Fellowship Report

Dr Adrian Orifici

Senior Lecturer

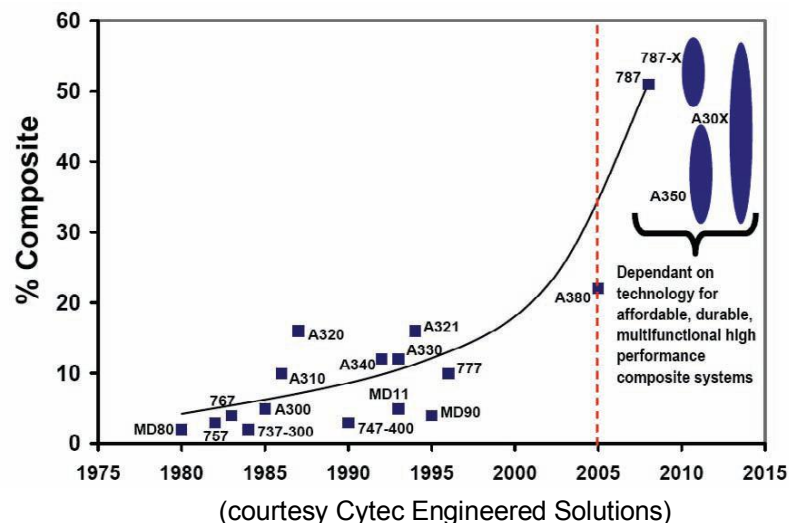
School of Aerospace, Mechanical and Manufacturing Engineering

2008 AFAS/FEAST-France Fellowship

- **Topic: Safer, Lighter and Smarter:
Advancing Frontiers in Aerospace Structures**
- **Fellowship Mission: 1 week in Paris, October 2008**
- **Visits to institutions relevant to my work in aerospace structures and composite materials**
 - 3 universities, 1 research institute
 - Followed my Victoria Fellowship mission
 - Europe (Germany, Italy) -> US -> France
 - School holiday period
 - Difficult to find availability (particularly EADS)
- **Not all of the funds were spent**
 - Approval has been given for a follow-up trip

Background

- **Academic Background**
 - RMIT BEng (Aerospace) 2003, RMIT PhD (Aerospace) 2007
 - RMIT Postdoctoral Researcher 2007-2009
 - RMIT Senior Lecturer 2009
- **Research covers application of fibre-reinforced composite materials (composites) with aerospace structures**
- **Focus on developing models and tools for numerical simulation, as part of design of aerospace structures**



ONERA

- **ONERA is the French national aerospace research centre, with eight major facilities in France and about 2,000 employees including 1,500 scientists, engineers and technicians.**
- **Discussed ONERA's work in analysis of composite materials with representatives from Airbus Deutschland on Victoria Fellowship**
- **Composite Systems and Materials Division (DMSC) at ONERA have considerable expertise in modelling composite material behaviour and assessing the effect of uncertainty in design**
- **Contact: Dr Nicolas Carrère, Dr Frederic Laurin, Research Scientist, DMSC**
- **Visit included:**
 - Meeting: covering DMSC research, current and future directions, international projects, technical content and my research work
 - Tour of facility, which include material testing and computational facilities
- **Further exchange of results, publications and discussion upon return**



LMT Cachan

- **A joint research laboratory of Ecole Normale Supérieure de Cachan, Pierre & Marie Curie (Paris 6) University and the French Research Council CNRS (Department of Engineering Sciences)**
- **World-renowned reputation for leading materials research, with focus on advanced numerical simulation and computational structural mechanics**
- **Contact: Prof. Olivier Allix, Director (Head, Structures & Systems)**
 - Extensive experience in numerical simulation of damage for composite materials, directly relevant to my research work
- **Visit included:**
 - Meeting: covering research laboratory, current and future directions, local and international projects, technical content
 - Tour of laboratory, which includes advanced material and structural testing facilities, and numerical simulation facilities
- **Prof. Allix recently visited Australia, and plans to return 2010**



École Nationale Supérieure des Mines de Paris

- **The École Nationale Supérieure des Mines de Paris is one of Europe's leading research institutions, and the Centre des Matériaux has a distinguished reputation for research in materials**
- **Contact: Prof. Anthony Bunsell**
 - Extensive experience in composite materials, particularly in characterising fibre properties, long-term behaviour of composites, structural health monitoring, filament-wound pressure vessels
 - Long association with CRC for Advanced Composite Structures
 - Prof. Bunsell is currently hosting an RMIT PhD student for 1 year, as part of research into health monitoring of pressure vessels
- **Visit included:**
 - Meeting: covering research laboratory and staff, current and future directions, international projects, technical content, RMIT PhD student
 - Tour of laboratory, which includes wide range of high precision characterisation and inspection machines, as well as material testing and numerical simulation facilities



Laboratoire de Mécanique Paris X (LMpX)

- **LMpX is a laboratory within the University Paris X, which is focused on research and teaching in numerical techniques for structural analysis, optimisation of material properties and finite element analysis.**
- **Referred to LMpX from research scientist with NASA Langley Research Center on Victoria Fellowship**
- **Contact: Dr Michele D'Ottavio, Postdoctoral Researcher, LMpX**
- **Visit included:**
 - Meeting: covering LMpX research, Dr D'Ottavio's publication and research work, technical content and my research work
- **Further exchange of results, publications and discussion upon return**



Summary

- **Fellowship was a unique opportunity:**
 - Develop contact with French experts
 - Get exposure to leading edge research and facilities
 - Understand the direction of research in my field
 - To boost my development as a young researcher
- **Follow-up mission expected July 2009**
 - Re-visit institutions
 - Add others if possible (EADS Innovation Works)
- **Thank you AFAS and FEAST-France!**