

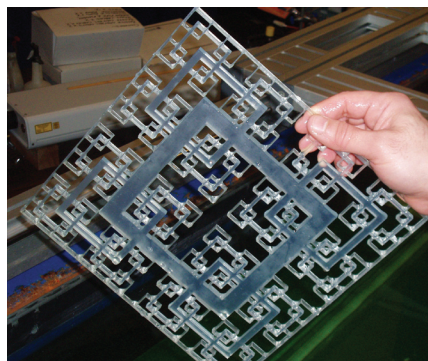
INVENTOR'S CORNER

Fractal thinking

Professor Christos Vassilicos (Aeronautics) on how he is creating 'bespoke turbulence' to address a range of problems from ventilating buildings more efficiently to reducing the noise of aircraft.

What's the basis of your research?

My team has developed a way to design turbulent flows by using fractal grids – structures made of repeating shapes that continually fit inside themselves.



What applications could your research have in our homes?

I'm working with Dr Gary Hunt (Civil and Environmental Engineering) to address the problem of ventilating buildings without wasting the energy created within them. We're looking at creating a new style of window or opening, using fractal grids to develop the shape as that has a major influence on how the air moves through the opening. This will help save energy.

How might industry benefit from using fractal grids?

One example is in the way companies mix food or liquids, which can be a huge drain on a company's resources. Working with Dr Hunt I am looking at using fractal stirrers (pictured top right) to provide maximum mixing using minimal power.

Are there applications for how energy is generated?

Today there is a move towards using lean mixtures for combustion. These mixtures

are more environmentally friendly but are typically harder to burn. I'm working alongside Dr Frank Beyrau, Professor Alex Taylor and Professor Yannis Hardalupas (Mechanical Engineering) on using fractal combustors to mix fuel more efficiently and aid combustion.

Are there other projects benefiting from your fractals research?

Another related line of research is with Dr Bharathram Ganapathisubramani (Aeronautics) where we are focusing on the development of silent air brakes or spoilers using fractal grids. We're aiming to shift the aero-acoustic noise to higher, quieter frequencies, without damaging drag or lift properties.

What lies ahead?

Imperial Innovations is helping to license the technology to designers of gas turbines and manufacturers of inline mixers (components which mix liquids or gases).

—ANOUSHKA WARDEN, IMPERIAL INNOVATIONS

course review



By course attendee Susan Brace,
Senior Research Group Administrator
(Electrical and Electronic Engineering)

Spanish for beginners

1 Why did you go on the course?

I have worked at Imperial for many years and every October I have thought about taking one of the Humanities courses to learn a new language, but I wasn't sure I'd be able to commit to evening classes for a whole year. When I saw the five-week intensive courses advertised, I thought this would be the perfect solution. I chose Spanish, as I was taking a holiday there last summer and thought it would be useful.

2 What did you learn?

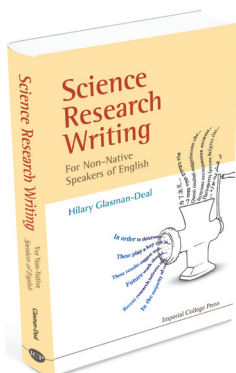
There was lots of class participation, which helped us gain the confidence to actually speak the language, and the class size was just right. Our teacher, Celia Martin Perez, was excellent. She made the classes interesting and fun by using lots of different resources and techniques for remembering vocabulary.

3 Would you recommend the course?

The course content was perfect for someone wishing to visit Spain and find their way around. I did use some of the helpful phrases we learnt on my trip to Spain, and would recommend this course to anyone looking for a taster of a new language and a bit of fun.

For details of the summer evening courses being run from the week beginning 24 May visit:
www.imperial.ac.uk/humanities/eveningclasses

Sticking to convention



Hilary Glasman-Deal is an English teacher in the Department of Humanities where she helps non-native English speaking MSc and PhD students to actively participate in the international academic research community. Hilary describes a new book she has written called

Science Research Writing for Non-Native Speakers of English, based on material she developed from

teaching graduate students at Imperial.

"When your language skills aren't perfect, it is important to organise your information in a conventional way and use conventional language so that the science can be easily 'decoded' by researchers worldwide. My book offers a template for research writing as well as a section which provides students with the grammar and vocabulary needed to operate that model. It has a descriptive rather than a prescriptive approach and focuses on describing

"It is important to organise your information in a conventional way...so that the science can be easily 'decoded'"

how good native speakers write. Verb tense confusion is particularly problematic for non-native English speakers. I sometimes see researchers 'losing' chunks of their own work because their carelessness with verbs has released ownership of their research to another researcher. Through my work teaching at Imperial I've seen you don't need to spend ages learning English to do it well, you just need to be able to identify and operate the conventional writing patterns in your field."

Hilary's book can be purchased from Imperial College Press: www.icpress.co.uk/general/p605.html