

# Technology that influences my work environment

We asked four prominent University of Pretoria academics to help us see, through their eyes, pieces of technology that have influenced the way they think about their work.

## Light-reflecting optical microscope

The microscopic internal structure of a metal determines its properties on a macroscopic scale. Careful manipulation of a metal's microstructure ensures that it exhibits the required combination of properties for a given application. A metallurgical microscope therefore becomes an invaluable tool for any physical metallurgist searching for clues to explain the behaviour of a metal.

Prof Madeleine du Toit,  
Head of the Department of Materials Science and Metallurgical Engineering

→ Prof Madeleine du Toit with a light-reflecting optical microscope.



## CCD array camera

I have always enjoyed mathematical geometry and have used images to illustrate or investigate fluid mechanics problems. Now, it became quick (no more hours in the darkroom), quantitative (through some satisfyingly elegant lens formulae) and amenable directly to computation and automation. Suddenly a whole branch of fluid mechanics visualisations became legitimate quantitative tools.

Prof Geoffrey Spedding,  
Department of Mechanical and Aeronautical Engineering

## Accelerometer

Accelerometers are sensors that are used to measure the dynamic response of structures with respect to an inertial frame such as the earth. Present day accelerometers are light and robust sensors which allow the structural analyst to get a very reliable picture of how a structure vibrates, and are by far the most common motion transducers used in structures laboratories around the world, and also in the Sasol Laboratory for Structural Mechanics at the UP. They are very useful in troubleshooting structural problems and also render signals which can contain remarkably useful information on the state of health of machinery. A very large proportion of the research in the Dynamic Systems Group is based on the development of diagnostic procedures using signals like these.

Prof Stephan Heyns,  
Department of Mechanical and Aeronautical Engineering

## Facebook

It completely changed the way I think about Web sites. Web sites normally provide static content or, at best, an interactive environment between a human and a computer. Facebook, however, allows us to interact with other human beings on a social and professional level. One can chat, share, view rich content and have fun!

Prof Hein Venter, Department of Computer Science



→ An accelerometer used in an autopilot for radio-controlled aircraft

