Thin-film solar cells in print

A banknote printing company and CSIRO are among the members of the Victorian Organic Solar Cell Consortium (VICOSC), which is developing a new generation of polymer solar cells that can be printed like money.

The banknote printer, Securency International, has begun trials to progress the development of the printable, reel-to-reel, thin-film solar cells, designed to be cost-effectively mass-produced and easily installed.

VICOSC includes researchers from the CSIRO Future Manufacturing Flagship, University of Melbourne and Monash University, and industry partners Securency, BP Solar, Bluescope Steel and Merck.

'We have assembled a team of world-class scientists spanning chemistry, physics and materials science to develop the molecular building blocks which will form the basis of this solar energy revolution,' said CSIRO's Dr Steve Morton.

'This research will act as a catalyst to the creation of world-leading Australian businesses in the field of printable electronics.'

CSIRO developed the advanced polymer technology for plastic banknotes now used in Australia and 21 other countries.

CSIRO researcher Dr Scott Watkins with a sheet of the thin-film polymer solar cells. Tracey Nicholls, CSIRO

Carbon fallout from February fires

The February bushfires in Victoria released an amount of carbon dioxide into the atmosphere equivalent to Australia's total yearly industrial emissions, according to a recent story by Asa Wahlquist in the *Australian*.

The story quoted Professor Mark Adams, from the University of Sydney, who said the bushfire emissions were far beyond what could be contained through carbon capture and needed to be addressed in the next international carbon emissions agreement.

In earlier work for the Bushfire Co-operative Research Centre, Professor Adams estimated the 2003 and 2006–07 bushfires could have put 20–30 million tonnes of carbon (70–105 million tonnes of carbon dioxide) into the atmosphere.

'That is far, far more than we're ever going to be able to sequester from planting trees or promoting carbon capture,' he said.

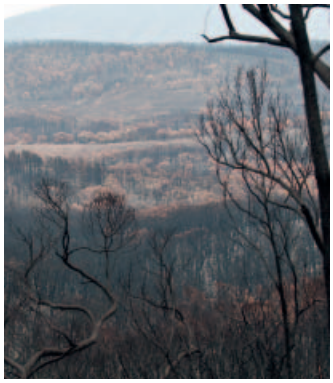
He pointed out that while the 2003 and 2006–07 bushfires were burning land carrying 50–80 tonnes of carbon per hectare, the latest bushfires were 'even more carbon-dense than last time, well over 100 tonnes above-ground carbon per hectare'.

'Not all of what is in the vegetation goes up, but you also lose much of the carbon in the litter and understorey and also some of the soil carbon,' he said.

Carbon emissions from forest fires are not counted under the Kyoto Protocol, but he said he thought it likely they would be in future agreements.

'All informed scientific opinion suggests that whatever new protocol is signed (at the UN summit) in Copenhagen or elsewhere will include forest carbon, simply because to not do so would be to ignore one of the biggest threats to the global atmospheric pool of carbon dioxide, the release of carbon in fires.'

Professor Adams said this will have an impact on plans to use forests for carbon sequestration. 'If the long-term fire regime changes – we are now starting to have more fires – we may completely change the carbon balance of the forest.'



With thousands of square kilometres of Victoria burning in the February fires, emitting millions of tonnes of carbon dioxide, there may be an argument for including forests in the Carbon Pollution Reduction Scheme. Nick Pitsas, CSIRO

Carbon could also be sequestered in the soil as charcoal, known as biochar. 'One of the big unknowns is how fires interact with biomass carbon to produce charcoal and ash, and how long that charcoal and ash lives in the soil,' Professor Adams said. He argued it was more important to investigate bushfires and the carbon cycle than it was to study carbon capture from coal-fired power stations.

YUS: PNG's first forest conservation area

Papua New Guinea (PNG) has proclaimed its first national conservation area – a 760 km^2 slice of tropical rainforest stretching from the coastal reefs of PNG's northern Huon Peninsula to the 4000-metre peaks of the western Saruwaged Mountains inland.

The YUS Conservation Area is named for the region's three main rivers: the Yopno, Uruwa and Som. The forest provides critical habitat for Matschie's tree kangaroos, a species listed as endangered by the IUCN.

The PNG Government's declaration follows years of work in the area by Conservation International (CI) and biologists from the Tree Kangaroo Conservation Program (TKCP) at Seattle's Woodland Park Zoo in the US.

The habitat of the endangered Matschie's tree kangaroo is within PNG's new YUS Conservation Area. Tim Laman/CI

The biologists, with support from CI and National Geographic, worked with local landowners and the PNG Government to establish YUS.

The land was pledged by more than 35 indigenous villages in the region, which have formally committed to prohibit hunting, logging and mining within the conservation area.

TKCP has been working with community leaders to increase access to education and improve community health within the villages and is helping establish a local community-based organisation to manage the YUS Conservation Area.