

## Nano solution to sick building syndrome

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'Sick building syndrome' causes persistent illness in office workers and costs the Australian economy an estimated \$12 billion a year, but nanotechnology may have an answer.

Sick buildings are created when fumes given off from a range of products: paints, photocopiers, office furnishings and plastics. Known as volatile organic compounds, these fumes are a major pollutant for indoor environments.

According to a young researcher from Curtin University in Western Australia, the solution lies in the clever use of nanotechnology to degrade or decompose these toxic compounds before they have time to act.

"Volatile organic compounds are a major pollutant for indoor environments where some of these compounds are highly toxic and can cause carcinoma," says Ruh Ullah, doctoral student in the Department of Chemical Engineering at Curtin University in Western Australia.

He has developed nanomaterials that can efficiently deal with a considerable amount of these compounds under sunlight irradiation.

Mr Ruh Ullah's new research on the application of nanotechnology for indoor air purification will be showcased at the CRC Association's Annual Conference. His research is for the CRC for Contamination Assessment and Remediation of the Environment.

His research used nano particles from common earth-based elements such as silver, cobalt and tungsten and from more rare elements such as tantalum, indium and niobium. It was discovered that when these nano-sized earth particles were exposed to ultraviolet or natural visible light, the oxidation process reduced the 'volatile organic compounds' (VOCs) present in air to carbon dioxide and water.

"Many VOCs are associated with headaches and irritation of the eye, nose and throat. Others can affect coordination, cause nausea, and damage the liver, kidneys and central nervous system," says Mr Ruh Ullah.

In his research Mr Ruh Ullah prepared new nanomaterials for the oxidation process that can be used to decompose hazardous indoor compounds within the air.

Mr Ruh Ullah's project leader, Dr Shaobin Wang, says: "We are developing an air filter and purifier by incorporating the nanomaterials. In addition, these nanomaterials can be coated on wall or window surfaces for removal of indoor VOCs".

"We expect that the technology will be implemented in the next a few years".

Rua Ullah will be speaking at the **annual conference of the Cooperative Research Centre Association** —'Collaborate | Innovate | 2012'—, **National Wine Centre of Australia in Adelaide on 15–17 May**.

He will speak at Plenary Session 3 on **Wednesday 16 May 8:30–10:30am** following addresses by Senator The Hon. Chris Evans, Minister for Tertiary Education, Skills, Science and Research and Simon McKeon, 2011 Australian of the Year.

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