

Research reveals what turns free radicals on

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In just one of the practical applications of free radical research, Professor Stephen Blanksby (left), has been working with BlueScope Steel to help develop the long-lasting building materials of the future.

(Phys.org) —UOW chemistry researchers have revealed what turns free radicals on...and off again in an article recently published in *Nature Chemistry*.

Professor Stephen Blanksby and UOW [PhD student](#), David Marshall, in collaboration with Professor Michelle Coote and her team at the Australian National University, have discovered that activity can be turned on and off in a certain class of [free radicals](#) using a simple 'switch', such as changing the pH by adding either an acid or a base.

Professor Blanksby says free radicals cause us to age, make us sick and eat away at our [possessions](#) – causing everything from the paint on our cars to clothes pegs on our washing line to deteriorate and fail – and these findings pave the way for the development of new and more efficient ways to place free radicals under our control.

"Free radicals have a bad reputation for their extraordinary, and in many cases, indiscriminate

[reactivity](#). For example, uncontrolled proliferation of free radicals in the body can damage essential [biomolecules](#), such as proteins and DNA, leading to diseases like cancer."

However, Professor Blanksby, who is the Director of the UOW node of the ARC Centre of Excellence in Free-Radical Chemistry and Biotechnology, says: "if we can harness and control this extraordinary reactivity, we can put the radicals to work for us, such as in making polymers and plastics we use everyday."

Quantum chemical calculations undertaken as a part of this study also hint at the possibility that nature may already be employing the same mechanism discovered by the researchers to protect biomolecules from free radical damage.

Hear Professor Blanksby talk about his exciting research at the [UOW Big Ideas Festival](#) on Wednesday 8 May.

More information: [UOW Big Ideas Festival](#)

Provided by University of Wollongong

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