Fats of life
Lipids beyond the bilayer
John Ruck Keene (1917–2014)

John Ruck Keene, former secretary general and chief executive of the Royal Society of Chemistry (RSC), has died aged 97.

Ruck Keene’s career at the society spanned over three decades. As leader of the Chemical Society, he oversaw its amalgamation with the Royal Institute of Chemistry, Faraday Society and Society for Analytical Chemistry to become the RSC. After the merger was completed in 1980, he was chosen as the first secretary general and chief executive of the newly created RSC, and is named in the Royal Charter displayed at the society’s headquarters in London, UK. He retired in 1981 and was named an honorary fellow of the society in 1982.

Robert Parker, chief executive of the RSC, paid tribute to his predecessor: ‘I am saddened to hear of the passing of a man whose great service to chemistry laid many of the foundations of the Royal Society of Chemistry as it is today,’ he said. ‘Amalgamating the societies was a demanding task of over eight years’ work and has led to us becoming the world’s leading chemistry community. Coupled with his 35 years of service, including a remarkable 34 as secretary general, John Ruck Keene’s efforts are truly worthy of our gratitude.’

Analytical tools made from ordinary office paper

Commonplace equipment can turn office paper into cheap, portable and disposable electrochemical devices that are ideal for using in remote locations.

The simple sensors designed by William de Araujo and Thiago da Paixão at the University of São Paulo, Brazil combine silver ink with ordinary office paper. Office paper is 97% cheaper than the chromatography paper commonly used in cutting-edge paper-based sensors. The duo say the advantage of their sensor is that fabrication is very simple and all the required materials and equipment are readily available. It should be possible to make the sensors without being in a sophisticated laboratory, which allows analysis in remote places.

A sheet of office paper is printed with wax to form a pattern of circular hydrophilic cells and a template is used to paint silver ink onto the paper to form electrodes. Each cell can then be cut out to form a three-electrode electrochemical device. Used with a potentiostat, these devices can detect picric acid, an explosive, and lead, a component of gunshot residue. They also have sensitivity towards chloride ions and heavy metals which could lead to their application in environmental monitoring.

The work was published in Analyst (DOI: 10.1039/c4an00097h), and Araujo and da Paixão are now working to develop their system into a cheap alternative to the glucometer test strips that are used to monitor glucose levels in patients with diabetes.

Carbenes beat thiols for robust monolayers

Using N-heterocyclic carbenes rather than thiols to bond self-assembled monolayers (SAMs) to gold surfaces makes them more robust, say researchers in Canada. This approach could be used to make sensors that stand up to more extreme conditions. The work is published in Nature Chemistry (DOI: 10.1038/nchem.1891). Thiol monolayers are useful for electrochemical sensing because they allow researchers to attach organic receptors to a metal surface. However, the thiol ligand can detach from gold even under relatively mild conditions. The monolayers break down slowly in air, and more rapidly in common organic solvents such as tetrahydrofuran (THF).

Researchers at Queen’s University and the University of Toronto, led by Cathleen Crudden and Hugh Horton, investigated assembling monolayers on gold with N-heterocyclic carbene (NHC) ligands. NHCs are unusually stable for carbenes, and can be produced in quantity and stored. They are significantly more reactive than thiols, and hence trickier to handle. But they form a much more stable bond to the gold surface, which remains completely inert for long periods in air and water; can be heated for 24 hours in boiling THF with no desorption; and is electrically more robust.

The teams are now working on attaching the carbene ligands to gold nanoparticles, which could make them useful for drug delivery, and are also finding easier ways to synthesise the monolayers.

New NSF director

Astrophysicist France Córdova has taken over as director of the US National Science Foundation (NSF) succeeding Subra Suresh, who stepped down last year to become president of Carnegie Mellon University. Córdova served as NASA’s chief scientist in the 1990s before holding professorships at the University of California then becoming president of Purdue University.

Scientists’ network to boost evidence-based policy

Researchers from three UK universities have proposed setting up an Evidence Information Service, a centre that will connect politicians with scientists to provide briefings and information on research evidence. The founders have launched a national consultation and are planning a parliamentary trial.

Europe calls for text mining copyright reforms

A European Commission report has called for a change to copyright law that would allow scientists to use text-mining computer software to extract facts and data from research papers. Currently, permission from the copyright holder is needed, and many publishers have blocked text-mining programs from accessing material online, but the report argues text-mining for scientific purposes should be permitted.

GO FIGURE

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The number of people in the UK that die prematurely every year as a result of air pollution, according to a report released by Public Health England. Parts of the UK experienced high pollution levels in recent weeks.