

Stable contacts for molecular electronics

Single molecules are predicted to play a key role in the future of miniaturised electronics. One of the biggest challenges facing molecular electronics today is the lack of mechanically stable single-molecule contacts to metal or semiconducting electrodes. In a study led by Nadim Darwish at Curtin University, single molecules, terminated by diazonium salts at both ends, were used to form covalent bonds to both gold and silicon electrodes, mimicking standard metal–insulator–semiconductor diodes (Peiris C.R., Vogel Y.B., Le Brun A.P., Aragonès A.C., Coote M.L., Díez-Pérez I., Ciampi S., Darwish N. *J. Am. Chem. Soc.* 2019, **141**, 14 788–97). The single-molecule circuits survive for more than a second at room temperature, a duration that had previously been unreachable. The ability to form mechanically stable

single-molecule circuits on the time scale of seconds allows the electronic properties of single molecules to be probed with a level of detail that was

previously inaccessible and brings us a step closer towards the realisation of single-molecule electronics.

