Ivy uses nanoparticles to climb walls, chemists discover

March 26 2008

Ivy plants secrete nanoparticles to help them grip walls, US-based chemists have reported.

The evergreen plants cling onto surfaces using tiny rootlets that spring out from their stems – these rootlets end in fingers or disks, hundreds of micrometres long.

Charles Darwin first reported in 1876 in his monograph *Movements and habits of climbing plants*: 'the rootlets of the Ivy, placed against glass … secrete a little yellowish matter.' But what this substance is, and how it helps the ivy climb, has remained a mystery – until now.

Mingjun Zhang of the University of Tennessee and colleagues have now studied the secretions, and found remarkably uniform particles. At just 70 nanometres across, they are about 1000 times thinner than a human hair. 'We are confident that the nanoparticles are formed inside the ivy stem, then secreted out through the rootlet's fingers,' Zhang told *Chemistry World* magazine.

The nanoparticles are made from carbon-based compounds, consisting of long hydrocarbon tails and nitrogen, oxygen or sulfur-containing heads – an arrangement which allows them to form strong bonds between the ivy and the wall.

While plants have previously been used to grow nanoparticles (instead of synthesising them chemically), Zhang says the idea that a plant would

secrete nanoparticles naturally in order to help it climb is ‘pretty unique’.

The full text of this *Chemistry World* story is online today at:
www.rsc.org/chemistryworld/New … 8/March/26030802.asp

Source: Royal Society of Chemistry