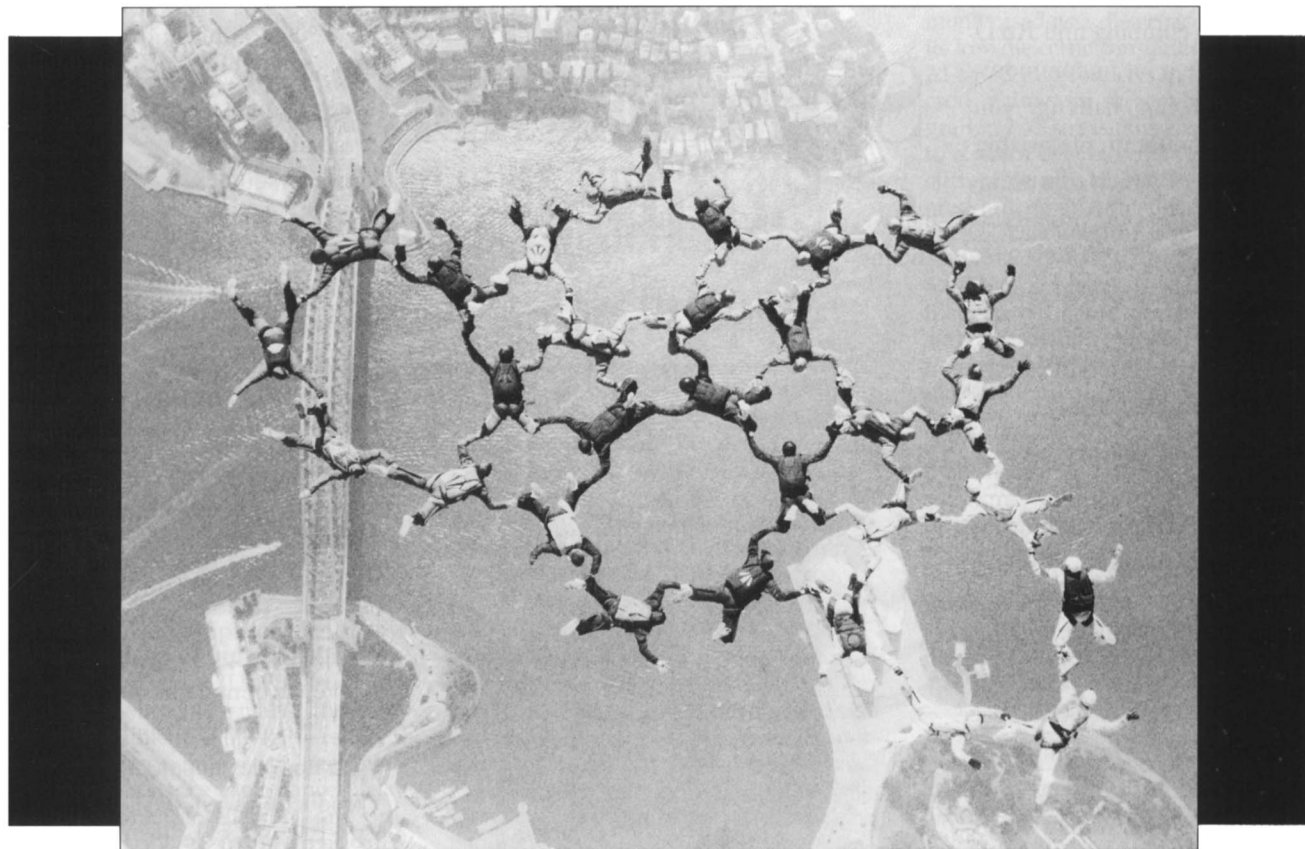


Figures appearing in the EDITOR'S CHOICE are those arising from materials research which strike the editor's fancy as being aesthetically appealing and eye-catching. No further criteria are applied and none should be assumed. When taken out of context, such figures often evoke images beyond and unrelated to the original meaning. Submissions of candidate figures are welcome and should include a complete source citation, a photocopy of the report in which it appears (or will appear), and a reproduction-quality original drawing or photograph of the figure in question.



This EDITOR'S CHOICE photo appeared in the April 24, 1994 *New York Times*.^{*} Any true polymer chemist and certainly all non-scientists would have passed it off as a photo of a bunch^{**} of daredevil skydivers emulating the Olympic rings at 6,000 feet above Sydney harbor in an attempt to convince the International Olympic committee to confer Olympic standing on their sport. But we who are technical nonspecialists immediately realized that this snapshot finally documents what avid polymer chemists must do on their days off. The similarity to those incomprehensible ball and stick diagrams that accompany every organic chemistry publication is unmistakable. However, before consulting an expert to learn just what -ene, -one, or -ane ending this molecule's name should assume, we can do some analysis on our own. First, we know that its smallest units are carbon-based and they each appear to have four extremities for bonding to each other or to other ligands (a term we only now notice must derive from leg-hands). We also note that the large interstices have sixfold point symmetry (if we ignore the defective five-unit ring). There are smaller interstices with four- and threefold axes. The overall structure shows a mirror plane (c2) symmetry element. We cannot assess chirality, but it is presumably opposite to that which a homologous compound would exhibit over New York, the

Coriolis force being what it is down under. Taken together, it seems they have succeeded in creating a previously unknown space group. One need not know much about the bonding habits of this particular type of carbon-based unit to ascertain that they are neither purely diamondlike (sp³) nor purely graphitic (sp²), but are a new high-bred (viz., hybrid) variety. We also suspect that this new form of carbon is at best metastable. Before even the first monolayer coats the opera house roof, the molecule, we hope, will have completely dissociated. We are told by ground-based organic chemists that the three- and fourfold coordinations are never seen in nature and would obviously be energetically impossible. That, we suppose, could account for the metastability, but we prefer a simpler self-preservation rationale.

^{*} Actually the photo above was taken at a slightly different instant than the one in the newspaper where the opera house is not partially upstaged by a diver. (Photo credit: Wayne Larkin, Visual Design Group, Unanderra, NSW, Australia)

^{**} Although the caption to the photo in the news report claimed "Thirty Australian sky-divers," we count only twenty-nine. Careful inspection will reveal that one of the rings is missing its sixth diver — someone had to hold the camera!

Make R&D An Easier Climb With Schumacher Sources

Rock climbing and R&D have a lot in common: both can challenge you with a mountain of variables, any one of which can bring your progress (or process) to a halt. Schumacher's ability to create cutting edge developmental chemicals can turn one of your most volatile R&D variables into a rock solid constant.

When your development project moves to the production line, Schumacher has the capacity to ramp up your experimental R&D chemicals to full production volumes. And these sources are backed by the same Schumacher reputation for reliability that has made our production chemicals the industry standard for quality for 20 years.

For two consecutive years – 1992 and 1993 –



Schumacher has won the industry's coveted "Supplier

Excellence Award"

presented to less than 0.5% of all TI suppliers worldwide.

Since 1989, Schumacher's annual international conference has brought together the world's top scientists and process engineers to present ideas and discoveries focusing on the technology of the future.



Our applications lab – supported by Ph.D. chemists and engineers – will help you evaluate development sources.



Trans-LC[®], the TCA replacement co-developed by Schumacher and Intel,

went from development to production within 24 months. Today it's used in approximately 100 wafer fabs worldwide.



Schumacher's 1992 award for CupraSelect[®] underscores our leadership in cutting edge developmental chemistry.

Schumacher can help take you from development through production with: TAETO, BST, CupraSelect[®], TDMAT, TDEAT, low ϵ dielectrics and low temperature oxides, plus many others.

The R&D "climb" will always be a challenge, but Schumacher innovation can make your journey easier, from the bottom... all the way to the top.



CVD-TiN
Barrier
layer
deposited
by Applied
Materials.



A Unit of Air Products and Chemicals, Inc.
1969 Palomar Oaks Way, Carlsbad, CA 92009
FAX: (619) 931-7819 *Patented

Give us a call:
(619) 931-9555
(800) 545-9242 *Continental U.S.*
(800) 545-9241 *California only*

©1994 by Schumacher