The NSF is fully committed to protecting the environment of Antarctica. It complies with all applicable regulations. In Antarctica, as in the United States, less careful past procedures have come home to roost. We are cleaning up vigorously with support from the Administration and Congress.

Walter E. Massey
Director,
National Science Foundation,
Washington, DC 20550

REFERENCES

1. *U.S. Antarctic Program Final Environmental Impact Statement* (National Science Foundation, Washington, DC, June 1980); *Final Supplemental Environmental Impact Statement for the United States Antarctic Program* (National Science Foundation, Washington, DC, October 1991).
2. H. S. Lenihan, J. S. Oliver, J. M. Oakden, M. D. Stephenson, *Mar. Pollut. Bull.* 21, 422 (1990).
3. R. W. Risebrough, B. W. De Lappe, C. Younghans-Haugh, *ibid.*, p. 523.

Palca's 17 January article "Poles apart, science thrives on thin ice" gives the impression that environmental constraints in the Antarctic have now become so strict that they may even threaten Antarctic science. Unfortunately, in our experience the opposite is proving to be the case: the environmental constraints imposed in the Antarctic are proving inadequate to protect the science we are conducting at the Arrival Heights Site of Special Scientific Interest (SSSI). Furthermore, the threat to our experiments involves an apparent violation of the Antarctic Treaty by a private company. If it is allowed to stand, it could lead to a severe weakening of the protection for all the SSSI's and Specially Protected Areas in the Antarctic, which include unique penguin and seal colonies, unusual fossil deposits, and areas that are being used for long-term monitoring studies of Antarctic flora and fauna.

The Arrival Heights SSSI was the second to be established in the Antarctic, and it is the only one devoted to the physical sciences. Its purpose was to provide an area uncontaminated as far as possible by man-made radio interference, and as a result its management plan specifies that "no RF [radio frequency] transmitting equipment other than low power transceivers for local essential communication may be installed within this site. Every precaution should be taken to ensure that electrical equipment is adequately suppressed and correctly installed to keep man-made electrical noise to a minimum." With the assurance provided by this plan we installed passive radio measurement systems in the Arrival Heights SSSI.

This last austral summer, without consulting with the U.S. scientists operating at Arrival Heights, the Telecom Corporation of New Zealand installed a satellite earth station (SES) on First Crater, which delimits the southern boundary of the Arrival Heights SSSI. Because the SES uses a radio transmitter that is located within the SSSI and which broadcasts directly over the site (at a low angle of elevation), both the construction and the broadcasts appear to be in clear violation of the Antarctic Treaty. It is our understanding that representatives from Telecom have argued to both U.S. and New Zealand government officials that the transmission frequencies used by the SES are too high to affect our measurements. Unfortunately, if we had been approached, as the treaty appears to require, we could have explained that our sensitive radio measurements are likely to be affected by the SES transmissions.

Over the years, scientists involved in sensitive radio measurements have been forced increasingly to move to the most remote regions of the earth to continue their measurements away from man-made interference. However, even in the remote Antarctic, these measurements are now threatened, despite the strict measures written into the Antarctic Treaty to protect the Antarctic environment.

A. C. Fraser-Smith
R. A. Helliwell
STAR Laboratory,
Stanford University,
Stanford, CA 94305
L. J. Lanzerotti
AT&T Bell Laboratories,
Murray Hill, NJ 07974
T. J. Rosenberg
Institute for Physical Science and Technology,
University of Maryland,
College Park, MD 20742

■

Superconducting Transition Temperature of Doped C_{60}: Retraction

We would like to retract our claim in our report of 8 November 1991 (*1*) that K/Tl or Rb/Tl codoping increases the superconducting transition temperature (T_c) of C_{60} relative to that for the well-known K_3C_{60} and Rb_3C_{60} superconducting phases. This claim was based on two different types of measurements made in two laboratories [low-field microwave absorption (LFS) by B.L.R. at Arizona State University and SQUID magnetic susceptibility by H.J.B. at Morris Research Inc.]. We now believe that no equilibrium phase having a T_c higher than that of the alkali metal–doped C_{60} was detected.

Both the SQUID and the LFS measurements initially made provided T_c's that were substantially higher for numerous C_{60} samples nominally doped with K/Tl or Rb/Tl alloys than for samples similarly doped in the absence of thallium. However, the SQUID results became suspect in December 1991, when all the authors realized that these measurements (both field-cooled and zero-field cooled) were being made during sample heating using a fast-scan program of the Quantum Design magnetometer, where temperature equilibration could not be ensured. Use of this rapid scan rate showed no significant effect on the observed T_c (compared with slow-scan data) for a reference sample ($Ba_{0.6}K_{0.4}BiO_3$, with $T_c = 31.5$ K), for samples of K_3C_{60} and Rb_3C_{60} and for numerous C_{60} samples annealed with the alkali metal/thallium alloy under conditions believed to result only in K or Rb doping. However, slow-scan dc SQUID and ac susceptibility measurements made on all nominally K- or Rb/Tl-codoped samples prepared from December 1991 to the present time have provided a T_c essentially identical to that of K_3C_{60} or Rb_3C_{60}, respectively, independent of the value of T_c obtained on fast scans. Zero-field cooled dc SQUID measurements by J. L. Costa-Kramer and K. V. Rao (Royal Institute of Technology, Stockholm) have confirmed this observation of a scan rate–dependent enhancement of apparent T_c for a Rb/Tl-doped sample and the absence of such an enhancement for C_{60} similarily doped only with Rb.

In the absence of T_c's above that of the alkali metal–doped C_{60} in the slow-scan SQUID data, we looked for possible errors in the LFS measurements. This investigation showed that a temperature drop existed between temperature sensor and sample in the cryostat used by B.L.R., and this temperature drop was higher for the K/Tl- and Rb/Tl-doped samples than for the corresponding K- and Rb-doped samples, thereby providing higher apparent T_c's for the former samples.

Among possible explanations for the anomalous scan-rate dependence of the apparent T_c for nominally K/Tl- or Rb/Tl-doped C_{60}, the most interesting would be that a Rb/Tl-codoped phase having a T_c above 30 K exists but that this phase is thermodynamically stable only below a first-order orientational phase transition temperature that is less than 30 K. If such were the case, observation of a T_c above 30 K only for fast heating rates might be understandable. Such an interpretation in terms of a hysteretic phase transition is consistent with observations on recently prepared $Rb/Tl/C_{60}$ samples of a higher apparent T_c for the initial fast-scan, zero-field cooled SQUID measurements than for subsequent identical measurements, as well as the observed elimination of the difference between fast-scan and slow-scan determinations of T_c after thermal annealing of the samples at temperatures of about 450°C. However, the above explanation would require the fortuitous near-coincidence of the T_c for the equilibrium high temperature phase of Rb/Tl-doped C_{60} and the T_c of Rb_3C_{60}. Consequently, the most reasonable interpretation of the present results is that the conditions used for thallium alloy doping result in thermal diffusion barriers, which interfere with thermal equilibration, and that similar thermal barriers are not present for C_{60} doped using only Rb. A corresponding time-dependent lack of thermal equilibration cannot explain the T_c enhancement in LFS data observed by B.L.R. for the K/Tl and Rb/Tl samples, as the LFS data were taken after waiting at each temperature until a constant LFS signal was obtained and the same results were obtained for both decreasing temperature and increasing temperature runs. Nevertheless, these results might also be explained by assuming that the effect of using thallium as a codopant is to increase thermal diffusion barriers within the samples. Despite the use of samples consisting of no more than 20 mg of C_{60}, it appears that these thermal diffusion barriers resulted in an increased temperature drop across the samples, which provided the apparent T_c enhancement compared with that for the corresponding K- or Rb-doped samples measured in the same manner.

Z. Iqbal
R. H. Baughman
S. Khare
N. S. Murthy
Research and Technology, Allied-Signal Inc., Morristown, NJ 07962
B. L. Ramakrishna
Department of Chemistry, Arizona State University, Tempe, AZ 85287
H. J. Bornemann
D. E. Morris
Morris Research Inc., Berkeley, CA 94704

REFERENCES AND NOTES

1. Z. Iqbal *et al.*, *Science* **254**, 826 (1991).
2. We thank K. V. Rao, J. L. Costa-Kramer, S. Glarum, A. A. Zakhidov, J. K. Krause, and B. C. Dodrill for their important measurements and valuable discussions.

Correction

In the 24 April "Inside AAAS" article "AAAS organizes more meetings of the mind" (p. 548), it is stated incorrectly that Paul Berg of Stanford University will be giving the keynote address and that Helen Donis-Keller of Washington University will be presenting a paper at the Science Innovation '92 meeting in San Francisco (21 to 25 July 1992). The Science Innovation '92 program was tentative at the time the article was written. Joseph Martin of the University of California, San Francisco, will deliver the keynote address on one of the major themes of the meeting, "Mapping the Human Brain." Helen Donis-Keller and Paul Berg were invited to speak but will not be on the program this year.