

# Superconductivity: The Sequel

Kevin D. Ott

One sure-fire Hollywood technique to exploit the success of a popular film or show is the sequel or the spin-off. The physics community has been a party to its own media sequel of the late 1980s, a blockbuster I'll refer to as "Son of Superconductivity," or perhaps "Woodstock of Physics II." That event is, of course, the recent media blitz surrounding the announcement of *cold fusion*.

Wherever your desktop fusion believability quotient lies at this point, two things are quite evident: one, "cold fusion" has become a scientific media darling of late, much like superconductivity was in 1987; and two, cold fusion's potential to alter the evolution of America's energy policies are astounding, especially in light of the Exxon tanker mishap and the 10-year anniversary of the Three-Mile Island fiasco.

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The promise of cold fusion holds great appeal for Washington policymakers—it's perceived as the instant panacea, the "quick fix" for nuclear power paranoia and fouled Alaskan beaches. After all, we're talking about boundless clean energy in an ecological era characterized by growing "greenhouse effect" concerns, acid rain precursors, and atmospheric ozone holes.

If all the fusion attention and controversy gives you flashbacks to the heyday of warm superconductors, a scant two years ago, you are in good company—the parallels are certainly striking. Scientific sniping matches, media blitzes, congressional hearings, and establishment of federal agency working groups to "evaluate" this latest "miracle" are as plentiful as the

spring tulips around the Capitol. The only thing missing are the newsletters.

Our challenge, and the unique continuing challenge of the organization I represent, CSAC, is to ensure that superconductivity, a proven phenomenon with definable commercial potential, continues on center stage in the minds of our policy-makers, scientists, academics and entrepreneurs. So before we all drop our oxides and take the heavy water plunge, let's look at opportunities and key players in the context of the Bush administration. For the federal commitment at this stage in the development of commercial superconductivity is a critical ingredient to the ultimate chances of its commercial success. And it will be up to our diverse superconductivity "constituency" to ensure sound federal programs are carried forward in the long term.

## The President's Science Adviser

The President's Science Adviser will be a key player in our efforts over the course of the new administration. The new Assistant to the President for Science and Technology is Dr. D. Allan Bromley from Yale University. This job has a new title and status, as President Bush has followed through on a campaign promise to elevate the position of the Science Adviser to that of the National Security Adviser—providing direct access to the Oval Office. Dr. Bromley is a renowned nuclear physicist, and will grapple with an unusually large number of scientific and technical decisions facing the new President, including development of the space station, construction of the superconducting supercollider, global warming, and SDI.

He will also play a pivotal role in the deliberations on the five-year National Action Plan for Advanced Superconductivity Research and Development, now being drafted by the White House Office of Science and Technology Policy (OSTP). This action plan will designate the responsibilities of several federal agencies as well as establish appropriate goals and priorities, and is being drafted in close collaboration with industry and academe. A kick-off

meeting was held at the White House in early April to begin this important work. Dr. Jack Simon, Senior Policy Analyst at OSTP and Chairman of the White House Committee on Materials (COMAT) has assumed staff responsibility for this issue, and has established a "war room" at OSTP to facilitate the exchange of information and new ideas for inclusion in the action plan. OSTP is actively seeking input and assistance on the action plan from the private sector. You may wish to make your thoughts known. You can write the OSTP c/o the Executive Office of the President, Washington, DC 20506.

## The National Commission on Superconductivity

The White House has also announced that David W. McCall of AT&T Bell Laboratories has been named Chairman of the National Commission on Superconductivity. This 24-member commission was mandated under the Omnibus Trade and Competitiveness Act of 1988, and is required to submit to the President and the Congress policy recommendations on the coordination and funding for superconductor activities in the federal government. The Commission's roster is indeed a stellar group, and many in and outside of government are looking to these men and women for a cohesive view of America's future in the race to commercialize superconductors.

Announcement of the first meeting of the Commission will appear in the *Federal Register*, and will likely occur in late May or early June. All meetings will be open to the public, and will allow public input. It is expected that the work of the commission will be to act as a bridge between the report of the President's "Wise-Men" and the five-year national action plan for superconductivity. You may recall that the "Wise-Men" released a report in January of this year advocating the development of superconductivity consortia among government, industries, and universities. Activities of the Commission are being coordinated by the staff of the National Critical Materials Council, who can be reached at the Executive Office of the President, 18th and C Streets NW, Washington, DC 20240.

## The Federal Superconductivity Budget

Besides Presidential appointments and Commissions, there is a great deal of continuing interest in the federal superconductivity budget. Funding concerns dominated the "early" years of high-temperature superconductivity. These

concerns have yielded results. Federal funding for superconductivity is estimated to climb to \$216 million in FY 1990 from \$187 million in FY 1989 and compared to \$145 million in FY 1988. This is a planned increase of 46% over two years. In high-temperature work, the increased spending is 65% over two years. Two agencies, the Department of Energy and the Department of Defense, currently provide about 79% of the total funding. Fourteen total agencies are involved in superconductivity programs at the federal level. These figures are derived directly from a comprehensive report issued in March of 1989 by the Committee on Materials (COMAT) of the Federal Coordinating Committee on Science, Engineering and Technology.

These budgetary caveats are offered to you for two reasons: one, the federal commitment to superconductivity *has* been "ramped up" as promised by the Reagan administration; and two, while the spending increases are significant, they will be ineffective unless there is agency coordination on current spending priorities and a healthy commitment of funds for long-term priorities. Focusing on better, more ef-

fective ways to invest the federal dollar, and finding ways to coordinate federal superconductivity policies among those 14 agencies is the task at hand. The Superconductivity Action Plan and the National Commission on Superconductivity were technically established to tackle these tough coordinating problems—not necessarily to call for more spending, but smarter, more innovative spending and coordination.

### Summing Up

Compared to the criticisms and controversies currently surrounding cold fusion, the evolution and confirmation of the phenomenon of the warm superconductor was a day at the beach—at least in hindsight. And lacking an announcement of a room-temperature superconductor, further superconductivity breakthroughs will never achieve the prominence of the Nobel discoveries in 1986-1987. After all, the chores of commercializing technology will not be deemed as newsworthy as the controversies surrounding their discovery. But it is these very "chores" that hold the key to

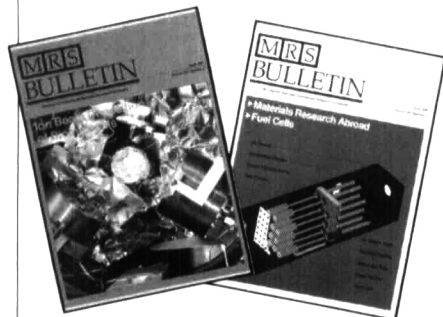
commercializing this exciting technology of superconductivity for the benefit of American interests.

Government, despite administration transition pains, has attempted to put certain programs in place. The success of government's attempts at fostering commercial technologies, however, are intrinsically tied to the interest and participation of abundant and diverse interests. So while the cold fusion maelstrom rages around us, we should be keenly aware of our own superconductivity agendas, and carry those forward in the halls of Congress, in the trenches of science, and in the spirit of entrepreneurship.

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