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News and Views

Material witness: Nobel intentions

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By the time this article goes to press, the lives of a handful of scientists will have been changed forever by a call from Stockholm. But there is of course no Nobel prize for materials science, just as there is none for earth sciences, mathematics, engineering — or indeed, if we are literal about it, for biology (which is one reason why the life sciences have so heavily colonized the chemistry prize).

Some of these disciplines have their own equivalents of the Nobels. The \$500,000 Crafoord prize was explicitly created in 1980 to fill the gaps in the Swedish awards, although it still makes no space for research on materials. The US Materials Research Society's Von Hippel award is its highest accolade, but it is hardly a headline-grabber.

This doesn't mean that all materials scientists are doomed to labour in obscurity, of course. The field is easily broad enough now to have claimed a brace of Nobels, not least in the gala year of 2000 when both the physics and the chemistry prizes were awarded in areas that would not look out of place in the *Materials Research Society Bulletin*, *Advanced Materials* or, needless to say, *Nature Materials*.

In chemistry, Alan Heeger, Alan MacDiarmid and Hideki Shirakawa were rewarded for their work on conductive polymers, discovered in one of the classic cases of scientific serendipity when a student of Shirakawa's in Tokyo added too much catalyst in a standard synthesis of polyacetylene. What came out was plastic electronics, LEDs and solar cells, all of which might be manufactured cheaply and on a massive scale by printing technology.

The physics award went that year to Zhores Alferov and Herbert Kroemer for developing the semiconductor heterostructures now ubiquitous in information technology and telecommunications, and to Jack Kilby, who made the first integrated circuit at Texas Instruments in 1958. Kilby's award is particularly thought-provoking. You can watch a video of his Nobel lecture online, as you can for all winners since 1999. And it is of course Kilby's invention that set in train the technological advances that make this possible. One can't help fantasizing, as one scans down the lists of laureates, about that option being available earlier — what it would have been like to see Crick and Watson receive their awards, let alone Einstein, Bohr, Rutherford and Curie.

There is certainly scope for Nobel dreams, then, among solid-state materials physicists, who might also draw inspiration from the 1987 award to Bednorz and Müller for the discovery of high-temperature ceramic superconductors. Perhaps one day photonic

crystals will squeeze in here. In chemistry, polymers are indeed a fruitful area, as testified by Staudinger, Ziegler and Natta, and Flory. And it would be wholly appropriate if carbon nanotubes were to be rewarded in the wake of the 1996 award to the discoverers of C_{60} , for nanotubes are surely the pre-eminent form of nanocarbon today.

But who will celebrate shape-memory alloys, biomimetic materials, superplastic ceramics, rechargeable lithium batteries? Where is there a way publicly to celebrate this kind of great 'stuff'?