templates could confer substantial benefits in terms of uniformity and alignment, owing to the greater ease of forming atomically sharp and straight cracks along the well-defined lattice planes of such materials. Another intriguing possibility would be to use highly strained single-crystal films, such as 'strained silicon', which can be grown with significant tensile strains of around 1% (ref. 4). These strained silicon layers are promising candidate materials for future micro/nanoelectronic devices because of their enhanced strain-induced carrier mobility.

The potential attraction of using such pre-strained crystalline layers is illustrated in Fig. 2. As well as increasing the likelihood of crack formation, relaxation of strain at the free surfaces of such films would result in cracks that are more accessible to subsequent deposited materials (Fig. 2B). Moreover, by heating the template above the glass transition temperature of the underlying substrate (here an oxide layer on a silicon wafer), viscous flow of this layer could allow the strained layer around the crack to relax and provide a means to increase the diameter of subsequent nanowires (Fig. 2C). Their diameters could be tuned still further by either oxidizing the crack walls (to narrow them) or oxidizing and subsequent etching of the oxide (to widen them).

In order for the full potential of Adelung's technique to be realized, it will be necessary to find better ways of controlling the position and structure of the crack templates; further exploration of the techniques shown in Fig. 2 should also prove fruitful. Nevertheless, the elegant simplicity of Adelung's approach is indisputable, and it should allow the growth of nanowires of almost any composition, using cheap and widely available materials.

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MATERIAL WITNESS

What's so pure about science?

One of the intellectual attractions of materials science, it has always seemed to me, is that, rather than sitting at the interface between science and technology, it demolishes conventional attempts to distinguish between them. In principle, this provides an opportunity to reorient the traditional understanding of how the two are related. In practice, it tends to mean that no one — not even scientists — is quite sure how to represent the science of materials: true science, or engineering?

Even so erudite a commentator as Derek de Solla Price, historian of science at Yale University in the 1960s, came unstuck in attempting to differentiate science from technology. While admitting that "easily we can fool ourselves into believing that we know what these terms mean", he went on to offer the usual cliché: "If, when a man [this was 1968] labors, the main outcome of his research is knowledge,… then he has done science. If, on the other hand the product of his labor is primarily a thing, a chemical or a process, something to be bought and sold, then he has done technology."

The same idea was repeated more succinctly by biologist Lewis Wolpert in 1992: "The final product of science is an idea; the final product of technology is an artefact." So most materials science must be technology, never mind the fact that it might be published in such resolutely technical outlets as *Applied Physics Letters* or *Journal of the American Chemical Society* (*JACS*). Such definitions insist that almost all chemistry (my crude estimate from surveys of issues of *JACS* is 96 per cent) is not real science but technology. And to judge from *Physical Review Letters*, less than half of physics is about understanding 'how nature works'.

Perhaps Price and Wolpert would be content to carve up the disciplines this way. But such an arbitrary and intricate division seems hardly likely to prove valuable, intellectually meaningful or even comprehensible to non-scientists, any more than Europeans can understand the rules of baseball.

I suspect that Peter Medawar put his finger on what is going on here. Francis Bacon, he said, made a clear distinction between 'pure' and 'applied': "between research that increases our power over nature and research that increases our understanding of nature." "Unhappily", Medawar goes on, "Bacon's distinction is not the one we now make... The notion of *purity* has somehow been superimposed upon it, and in a new usage that connotes a conscious and inexplicably self-righteous disengagement from the pressures of necessity and use. The distinction is [now] between polite and rude learning, between the laudably useless and the vulgarly applied, the poetic and the mundane."

It's an old snobbery that refuses to die. Of the philosopher's view of the engineer, Plato said "You despise him and his art, and sneeringly call him an engine-maker, and you will not allow your daughter to marry his son." Rather than trying to draw up pure, abstract and elevated definitions of what science is, might we not simply say that it is whatever scientists choose to do?

Philip Ball