MATERIAL WITNESS

NONE MORE BLACK

PHILIP BALL

It turns out that black is the new black. Specifically, Vantablack, a coating made from carbon nanotubes by the British company Surrey NanoSystems. The nanotubes, tens of micrometres long, are aligned normal to the surface like the threads of a carpet. They absorb 99% of the incident light, giving Vantablack an otherworldly appearance of absolute void. When you look at a surface coated in this material, it seems to have no topography at all: it's as if a small black hole has opened up in the prosaic fabric of the world.

Surrey NanoSystems say that their material might find uses in optical or microwave technologies, for example in stealth technology or to improve optical isolation in mirror telescopes. But the strangeness of its appearance lends itself to artistic uses too. The British-Indian artist Anish Kapoor, who has long experimented with intense colour and disorientating illusionism — for example in large sculptures with highly reflective surfaces — has been captivated by the possibilities of Vantablack (http://artforum.com/words/id=51395). Because the coating is not only so thin but also defies perceptions of shape, he considers it almost a "non-material": it "rests on the liminal edge between an imagined thing and an actual one," he says. Kapoor imagines coating the walls of a room with this black substance to confuse any sensations of space or confinement.

In this regard, Vantablack approaches the realm of invisibility. It is of course the opposite of transparent, but by denying three-dimensional shape it conjures an odd illusion of non-presence. A material that absorbs light perfectly is the means by which a chemist in Jack London's 1903 short story *The Shadow and the Flash* turns himself invisible (it couldn't really do that, of course, but to London it felt as though it should). Such dematerialization — what Kapoor calls "the non-space, or the non-object" — has long fascinated artists. The French artist Yves Klein, who shared Kapoor's fascination with the spiritual possibilities of colour and materiality, began work in the 1960s on an 'invisible architecture' in which walls would be made of powerful jets of air.

Yet there's something else Klein shares with Kapoor: a proprietorial attitude to special materials. When, in collaboration with a Parisian paint manufacturer, Klein devised a coating that preserved the magical lustre of dry powdered ultramarine pigment, he patented it as International Klein Blue to preserve what he saw as the purity of the concept. Kapoor has no patent on Vantablack, but he does have a monopoly — to the dismay of some other artists, he has secured exclusive rights with Surrey NanoSystems to use their material artistically.

Is that proper? Modern pigment technology has made art much more egalitarian than in the days when you could use the finest materials, such as natural ultramarine and gold, only if you had a wealthy patron. Klein's ultramarine was industrially produced by the ton, not extracted painstakingly from rare lapis lazuli. Kapoor's coup seems to take matters in the other direction, reinstating an advantage to those with privileged access to the best materials.

Regardless of how you feel about that, there's probably no one better than Kapoor to reveal the creative potential of Vantablack. And its makers themselves have no monopoly on carbon-nanotube-derived blackness. The Belgian artist Frederik De Wilde created works such as his metre-wide black square *NanoBlck-Sqr #1* (2014) after a collaboration in 2010 with nanotube researchers at Rice University in Houston, and he has also used black nanotube coatings developed by NASA. There's plenty of black at the bottom, it seems. ❐