

2007 Fall Meeting

November 26 - 30
Exhibit: November 27 - 29
Boston, MA

Please send proposals via e-mail to:

F07 Request for Symposium Proposals

The Chairs for the 2007 Fall Meeting are accepting symposium proposals through April 3, 2006. Proposals should include a description of the suggested topic, the names and affiliations of probable symposium organizers, and comments about the topic's importance to the materials science community as well as its history, if any, at previous MRS events.

Duane Dimos (dbdimos@sandia.gov), **Mary Galvin** (galvinme@airproducts.com), **David Mooney** (mooneyd@deas.harvard.edu), and **Konrad Samwer** (ksamwer@gwdg.de).

POSTERMINARIES

Fiction, Faction, Function or, What's In a Name?

Juliet assured Romeo, "What's in a name? That which we call a rose, by any other word would smell as sweet." Maybe; or as Evelyn Waugh would have said: "Up to a point, Lord Copper." The names we use for materials definitely modify our attitude to them. More importantly, they probably modify the public's attitude, too. Let's stay with fiction for a moment. Think of the internationally best known fictional material—kryptonite. Why are we familiar with the material from Superman? Because of repetition to us at a formative age. But what a crazy name—it's supposed to be a metallic element, but its name is based on krypton (an inert gas, not a solid), with an ending appropriate to a compound, not an element. What was wrong with *saturnium*, or *argabuthonium*? Since 1949, generations of young people have been confused about inert gases and the endings for metallic elements!

Other fictional inventions have had happier results. In Peter Pan, pixie dust allows us to fly if we are thinking happy thoughts; IBM updated the concept when describing its antiferromagnetically coupled media technology, which can increase the data capacity of hard drives by using "magnetic pixie dust."

Dust itself is a material in Philip Pullman's "Dark Materials" trilogy—or is it? Many believe that rather than a physical material, dust is an allusion to God. This is more interesting than the idea of an all-pervasive fine-grained material that settles on any flat surface overnight, but it does not help our confused youth come to grips with the material universe.

From fictional to factional materials. How else would we describe the subset of metallurgists who support aluminum

over steel, or the coterie of semiconductor mystics who espouse gallium arsenide in the face of silicon? And, more seriously still, the nuclear faction in the energy industry, who have a whole set of materials and problems to themselves. The issue here for materials researchers is not the political decision making, nor even the materials selection and disposal problems, but the potential disappearance of this faction because of non-replacement by young incomers. This threatens to leave society with no expertise to draw upon when making future decisions in a vital area, and risks new designs requiring that elu-

*The functional name
which transcends all others is
"smart material."*

sive fictional element *unobtainium*.

And so to a term defined by the optimists discussed by Alex King in a recent POSTERMINARIES (see *MRS Bulletin* 30, November 2005, p. 920)—functional materials. This is so good a misnomer that it could have been coined by a political spin doctor. It was presumably devised as a putdown for materials capable of providing good, solid, mechanical functions such as load bearing or energy absorption or flexibility sustained over millions of cycles. Or long-established humdrum functions like conduction of electricity or heat. Or decorative functions such as sheen or grain. It is not clear what a "functional material" can actually do. In what way is the function of passing electrons and holes in opposite directions, or emitting light, or exhibiting magnetism qualitatively different from bearing a load with a known deflection?

There is no difference except in the hyperbolic minds of those powerful people who gave the names.

The functional name which transcends all others is "smart material." In my pantheon, a smart person is one who knows the same things that I know, but goes on to draw far more useful or far-reaching conclusions from this knowledge. To me, a smart person is therefore delightfully unpredictable—if I could predict their conclusions, I would not consider them smart. On the other hand, a smart material is one which we design, and expect, to behave in a totally predictable way, always responding to a stimulus in the same boring fashion. This is the antithesis of smart behavior—it is, in fact, stupid—but would we have been funded for work on "stupid" materials?

In response to this excess of hype, which is threatening to swamp the unglamorously named but rather important structural materials—concrete, alloys, wood, nylon—I suggest that we found a lobby group to counter discrimination against strong, cheap, useful (and therefore unsexy) materials. I have not found a good name yet: Society for the Love of Unfashionable Materials and their Properties sounded promising until I looked at the acronym. But I have started on the promotional campaign; it is focusing initially on mudslinging and will describe functional materials as puny, brittle, expensive, and inaccurately named. Rather unattractive, isn't it? Would work be funded on ruinously expensive, weak materials with very limited behaviors made from poisonous elements? That should give the silicon faction some ammunition in their competition with the gallium arseniders, for a start.

PETER GOODHEW