

Race for better superconductors heats up

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Scientists have discovered a new family of superconductors -- materials that carry electricity more efficiently than copper and other metals -- whose properties rekindle enthusiasm about the possibility that these exotic materials could have practical applications in ultra-efficient electrical motors, power-generating stations, and other areas. The latest developments are chronicled in an article scheduled for the Oct. 20 issue of *Chemical & Engineering News*, ACS' weekly newsmagazine.

In the C&EN cover story, Senior Editor Mitch Jacoby notes that traditional superconductors, the first examples of which were discovered almost a century ago, must be cooled to very low temperatures with expensive liquid helium.

In the mid-1980s, however, scientists discovered so-called high-temperature superconductors, which could be cooled more economically with liquid nitrogen. But even then, the cost of cooling the conductors, as well as the difficulty in forming the materials in wires and other practical shapes, ruled out practical large-scale applications, such as municipal power systems.

Jacoby describes the discovery earlier this year of new superconductors whose compositions include iron and arsenic that still must be chilled below liquid-nitrogen temperatures but could lead to HTSCs that work at much higher temperatures. Until now, researchers thought that this high-temperature behavior was limited to superconductors composed of copper oxides, the article notes. The discovery has reignited an international scientific race to discover additional HTSCs that require

less cooling — perhaps even no cooling — and that could have many practical applications, the article notes.

Article: "Superconductivity heats up again"
pubs.acs.org/cen/coverstory/86/8642cover.html

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