

Next-generation steel by magnetic field processing

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New products made of stronger components that are lighter in weight, more energy efficient and have an extended use life may be possible through a technology that can alter the characteristics of steel and other materials.

Researchers at the Department of Energy's Oak Ridge National Laboratory and Florida State University are studying a magnetic field processing technology that influences the fundamental molecular behavior of a material through a process that produces unique performance characteristics and sometimes "impossible" microstructures.

The technology is significant in developing new avenues for major alloy development activities and materials research. This technique increases the processing tools available to materials scientists to customize performance and achieve major improvements in properties without the need of adding expensive alloy additions.

The research could result in benefits to the steel, heat-treating, forging, welding, casting, chemical and cast iron industries, as well as having significant promise for breakthroughs in the nanomaterials technology area.

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