

Low-Cost Precursor for Synthesis of High Coercivity Fe-N Magnet

Disclosure Number

201503501

Technology Summary

The present invention comprises novel precursor for making iron nitride magnetic materials at low-cost, with excellent magnetic properties, in particular coercivity. Iron nitride magnets based on the Fe₁₆N₂ phase are of great interest as a magnetic material for applications ranging from data storage to electrical motors for vehicles, wind turbines, and other power generation equipment. This is because the component base elements (Fe, N) are inexpensive and widely available, in contrast to rare earth based magnets which are costly and subject to supply availability risks. The Fe₁₆N₂ phase, which is the ordered version of Fe₈N, is widely reported to have the largest magnetization of any compound, but is also difficult to manufacture. The present invention is devoted to improved synthesis and stability of Fe₁₆N₂ nano-powders to be used in Fe-N magnets.

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