



US007651574B2

(12) **United States Patent**
Shull et al.

(10) **Patent No.:** US 7,651,574 B2
(45) **Date of Patent:** Jan. 26, 2010

(54) **DOPED Gd₅Ge₂Si₂ COMPOUNDS AND METHODS FOR REDUCING HYSTERESIS LOSSES IN Gd₅Ge₂Si₂ COMPOUND**

(75) Inventors: **Robert D. Shull**, Boyds, MD (US);
Alexander J. Shapiro, Rockville, MD (US);
Virgil Provenzano, Gaithersburg, MD (US)

(73) Assignee: **The United States of America as represented by the Secretary of Commerce, the National Institute of Standards and Technology**, Washington, DC (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 425 days.

(21) Appl. No.: **11/262,270**

(22) Filed: **Oct. 27, 2005**

(65) **Prior Publication Data**

US 2006/0144473 A1 Jul. 6, 2006

Related U.S. Application Data

(60) Provisional application No. 60/641,168, filed on Jan. 4, 2005.

(51) **Int. Cl.**
H01F 1/00 (2006.01)

(52) **U.S. Cl.** **148/121; 420/578**

(58) **Field of Classification Search** **148/121; 420/578**

See application file for complete search history.

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Primary Examiner—Roy King

Assistant Examiner—Jie Yang

(74) *Attorney, Agent, or Firm*—Kermit D. Lopez; Matthew F. Lambrinos; Luis M. Ortiz

(57) **ABSTRACT**

A Gd₅Ge₂Si₂ refrigerant compound is doped or alloyed with an effective amount of silicide-forming metal element such that the magnetic hysteresis losses in the doped Gd₅Ge₂Si₂ compound are substantially reduced in comparison to the hysteresis losses of the undoped Gd₅Ge₂Si₂ compound. The hysteresis losses can be nearly eliminated by doping the Gd₅Ge₂Si₂ compound with iron, cobalt, manganese, copper, or gallium. The effective refrigeration capacities of the doped Gd₅Ge₂Si₂ compound are significantly higher than for the undoped Gd₅Ge₂Si₂ compound.

5 Claims, 10 Drawing Sheets

