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(54) **SENSOR DEVICES COMPRISING
FIELD-STRUCTURED COMPOSITES**

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(58) **Field of Search** 257/414, 421, 257/428, 48, 467, 429, 417; 324/390, 401, 391

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(57) **ABSTRACT**

A new class of sensor devices comprising field-structured conducting composites comprising a textured distribution of conducting magnetic particles is disclosed. The conducting properties of such field-structured materials can be precisely controlled during fabrication so as to exhibit a large change in electrical conductivity when subject to any environmental influence which changes the relative volume fraction. Influences which can be so detected include stress, strain, shear, temperature change, humidity, magnetic field, electromagnetic radiation, and the presence or absence of certain chemicals. This behavior can be made the basis for a wide variety of sensor devices.

25 Claims, 6 Drawing Sheets

