US007274019B2

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

(10) **Patent No.: US 7,274,019 B2**
(45) **Date of Patent: Sep. 25, 2007**

(54) **METHOD FOR DETECTION AND IMAGING OVER A BROAD SPECTRAL RANGE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 94 days.

(21) Appl. No.: **11/190,784**

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

(65) **Prior Publication Data**

US 2006/0058196 A1 Mar. 16, 2006

Related U.S. Application Data

(60) Provisional application No. 60/593,003, filed on Jul. 30, 2004.

(51) **Int. Cl.**
H01L 27/18 (2006.01)

(52) **U.S. Cl.** **250/336.2**

(58) **Field of Classification Search** 250/336.2
See application file for complete search history.

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(57) **ABSTRACT**

A method of controlling the coordinate sensitivity in a superconducting microbolometer employs localized light, heating or magnetic field effects to form normal or mixed state regions on a superconducting film and to control the spatial location. Electron beam lithography and wet chemical etching were applied as pattern transfer processes in epitaxial Y—Ba—Cu—O films. Two different sensor designs were tested: (i) a 3 millimeter long and 40 micrometer wide stripe and (ii) a 1.25 millimeters long, and 50 micron wide meandering-like structure. Scanning the laser beam along the stripe leads to physical displacement of the sensitive area, and, therefore, may be used as a basis for imaging over a broad spectral range. Forming the superconducting film as a meandering structure provides the equivalent of a two-dimensional detector array. Advantages of this approach are simplicity of detector fabrication, and simplicity of the read-out process requiring only two electrical terminals.

25 Claims, 5 Drawing Sheets