



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

(10) **Patent No.:** **US 6,180,415 B1**
(45) **Date of Patent:** **Jan. 30, 2001**

(54) **PLASMON RESONANT PARTICLES, METHODS AND APPARATUS**

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(*) Notice: Under 35 U.S.C. 154(b), the term of this patent shall be extended for 0 days.

(21) Appl. No.: **09/027,048**

(22) Filed: **Feb. 20, 1998**

Related U.S. Application Data

(60) Provisional application No. 60/038,677, filed on Feb. 20, 1997.

(51) **Int. Cl.**⁷ **G01N 33/543; G01N 33/553**

(52) **U.S. Cl.** **436/518; 356/301; 356/307; 356/317; 356/318; 356/337; 436/164; 436/171; 436/524; 436/525; 436/805**

(58) **Field of Search** 436/164, 171, 436/518, 524, 525, 805; 356/301, 307, 317, 318, 337

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(57) **ABSTRACT**

A method and apparatus for interrogating a target having a plurality of plasmon resonant particles (PREs) distributed in the target are disclosed. In the method, a field containing the target is illuminated, and one or more spectral emission characteristics of the light-scattering particles in the field are detected. From this data, an image of positions and spectral characteristic values in the field is constructed, allowing PREs with a selected spectral signature to be discriminated from other light-scattering entities, to provide information about the field. Also disclosed are a novel PRE composition for use in practicing the method, and a variety of diagnostic applications of the method.

18 Claims, 10 Drawing Sheets

