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(54) **PHOTOTHERMAL ACTUATION OF A PROBE FOR SCANNING PROBE MICROSCOPY**

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CPC G01Q 10/00; G01Q 10/02; G01Q 10/04; G01Q 10/045; G01Q 10/06; G01Q 10/065; G01Q 20/00; G01Q 20/02; G01Q 20/04; G01Q 60/00; G01Q 60/24; G01Q 60/38; B82Y 35/00
USPC 850/1–6, 32, 33, 52, 62; 73/105
See application file for complete search history.

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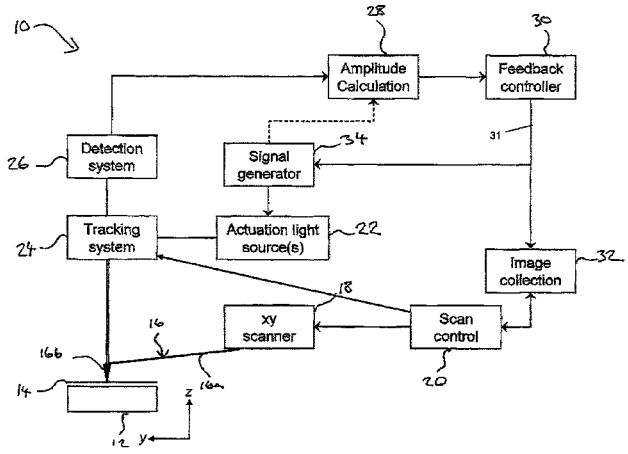
(57) **ABSTRACT**

Various methods of driving a probe of a scanning probe microscope are disclosed. One set of methods distribute the energy of a radiation beam over a wide area of the probe by either scanning the beam or increasing its illumination area. Another method changes the intensity profile of the radiation beam with a diffractive optical element, enabling a more uniform intensity profile across the width of the illumination. Another method uses a diffractive optical element to change the circumferential shape of the radiation beam, and hence the shape of the area illuminated on the probe, in order to match the shape of the probe and hence distribute the energy over a wider area.

19 Claims, 9 Drawing Sheets