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(72) Inventor; and

(75) Inventor/Applicant (for US only): **HUMPHRIS, Andrew** [GB/GB]; 27 Vintner Road, Abingdon, Oxfordshire OX14 3PF (GB).(74) Agents: **WILLIAMS, Ceili et al.**; STEVENS HEWLETT & PERKINS, Halton House, 20/23 Holborn, London, Greater London EC1N 2JD (GB).

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(54) Title: PROBE DETECTION SYSTEM

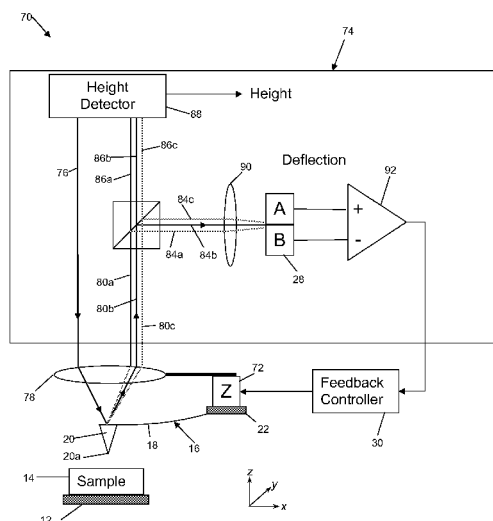


Figure 3

(57) Abstract: A probe detection system (74) for use with a scanning probe microscope comprises both a height detection system (88) and deflection detection system (28). As a sample surface is scanned, light reflected from a microscope probe (16) is separated into two components. A first component (84a) is analysed by the deflection detection system (28) and is used in a feedback system that maintains the average probe deflection substantially constant during the scan. The second component (84b) is analysed by the height detection system (88) from which an indication of the height of the probe above a fixed reference point, and thereby an image of the sample surface, is obtained. Such a dual detection system is particularly suited for use in fast scanning applications in which the feedback system is unable to respond at the rate required to adjust probe height between pixel positions.