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(54) Title: LASER MARKING SYSTEM FOR GEMSTONES AND METHOD OF AUTHENTICATING MARKING

(57) Abstract

A laser microinscribing system includes a Q-switched Nd:YLF laser (1) with a harmonic converter producing an output of about 530 nm, an optical system including a focussing lens, a gemstone mounting holder (144) that is displaceable along three axes for moving a workpiece (11) such as a gemstone with respect to the optical system so that laser energy is presented to desired positions, an imaging system for viewing the gemstone from a plurality of viewpoints including a top CCD (28) and a side CCD (32), a processor controlling the position of the holder (144) based on marking instructions and a predetermined program, and a storage system (156) for storing information relating to images of a plurality of workpieces. A rigid frame supports the laser (1), the optical system and the holder (144) to increase immunity to vibrational misalignments. A secure certificate of authenticity of a marked workpiece (11) is preferably provided having an image of the marking as well as the outline of a girdle of the gemstone.

