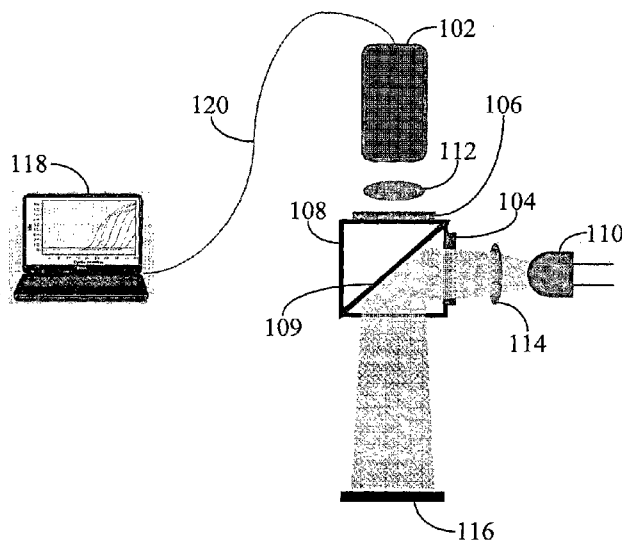




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[Continued on next page]

(54) **Title:** NON-MOTORIZED OPTICAL MULTIPLEXING FOR THE SIMULTANEOUS DETECTION OF DNA TARGET AMPLICONS IN A POLYMERASE CHAIN REACTION SOLUTION



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**FIG. 1**

(57) **Abstract:** [0065] A multiplexed polymerase chain reaction (PCR) DNA detection system and a method for DNA detection within the PCR system are provided. The PCR DNA detection system includes a color charge-coupled device (CCD) camera, fluorophore-quencher probes and an imaging chamber. The fluorophore-quencher probes are selected in response to fluorophores quenched by the fluorophore-quencher probes corresponding to three selected primary colors and peak channel responses of the CCD camera such that emission profiles of the fluorophores substantially match the three selected primary colors and peak emission profiles of the fluorophores correspond to the peak RGB channel responses of the CCD camera. A DNA sample and the fluorophore-quencher probes are located within the imaging chamber. The color CCD camera is focused on the imaging chamber for simultaneous detection of up to three targets from fluorescence of the DNA sample and the fluorophore-quencher probes.



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