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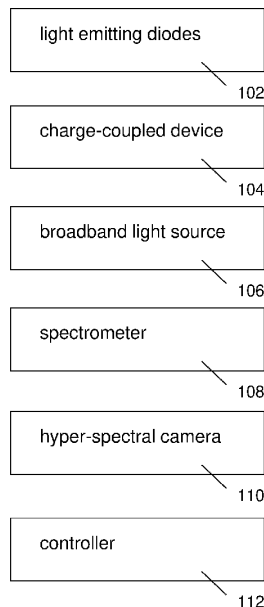
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(54) Title: OPTICAL SYSTEM, METHODS OF FORMING AND OPERATING THE SAME

FIG. 1



(57) Abstract: Various embodiments may relate to an optical system. The optical system may include a plurality of light emitting diodes configured to provide light of predetermined wavelengths, a charge-coupled device configured to receive the light emitted by one or more light emitting diodes of the plurality of light emitting diodes and reflected by an object for fluorescence imaging of the object, a broadband light source configured to provide broadband light, a spectrometer configured to receive the broadband light emitted by the broadband light source and reflected by the object for visible-near infrared-short-wave infrared spectroscopy of the object, a hyperspectral camera configured to receive the broadband light emitted by the broadband light source and reflected by the object for hyperspectral imaging of the object, and a controller coupled to the plurality of light emitting diodes, the broadband light source, the charge-coupled device, the spectrometer and the hyperspectral camera.

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