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(54) Title: MULTI-COLOR PULSE-AMPLITUDE MODULATED HANDHELD FLUORESCENCE IMAGER

(57) Abstract: Herein disclosed is a portable device operable to identify photosynthetic activity and contents of compounds in a plant part, the portable device may comprise: a light source comprising light-emitting diodes operable to irradiate the plant part with light comprising more than one wavelength; a control module operable to (i) have the light-emitting diodes emit the light as pulse signals and (ii) modulate amplitude and width of the pulse signals; a focus-adjustable lens and a filter optically coupled to the light source, wherein the adjustable lens and the filter are co-operable to consolidate light reflected from the plant part which may be irradiated by light from the light-emitting diodes; and a detector optically positioned to receive from the focus-adjustable lens and the filter the light reflected from the plant part, wherein the light reflected from the plant part corresponds to the photosynthetic activity and contents of compounds in the plant part, and the light reflected is transmitted as fluorescence. A method of identifying photosynthetic activity and contents of compounds in a plant part using the portable device is also disclosed herein.



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