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(54) Title: FOURIER PTYCHOGRAPHIC MICROSCOPY WITH MULTIPLEXED ILLUMINATION

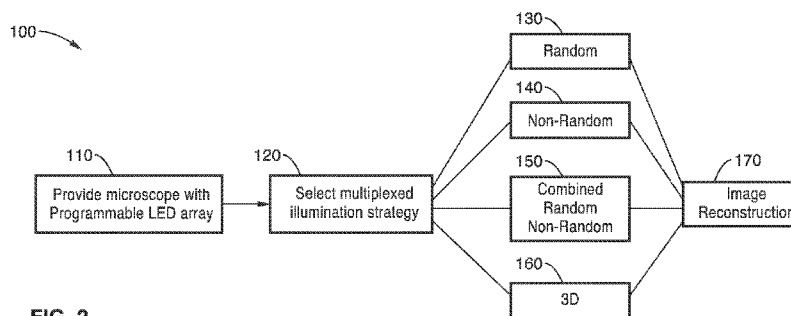


FIG. 2

(57) Abstract: A system and methods for wide field of view, high resolution Fourier ptychographic microscopic imaging with a programmable LED array light source. The individual lights in the LED array can be actuated according to random, non-random and hybrid random and non-random illumination strategies to produce high resolution images with fast acquisition speeds. The methods greatly reduce the acquisition time and number of images captured compared to conventional sequential scans. The methods also provide for fast, wide field 3D imaging of thick biological samples.