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Construction of a Confocal Fluorescence Microscope to Image Nitrogen Vacancy Centers[1] JORDAN STROMAN, JAMES GRIFFIN, GARY HARRIS, Howard University — Long term atomic memory can be achieved using nitrogen vacancy centers (NV). Howard University is optimizing the process of creating nitrogen vacancy centers using hot filament chemical vapor deposition (HFCVD). In order to provide reliable feedback concerning the presence, concentration, and orientation of these color centers, an optical system capable of performing confocal laser scanning fluorescence microscopy has been constructed. This system consists of a 200mw laser that emits light with a wavelength of 532nm. This light is focused on a sample using a Nikon Oil Objective Lens with a numerical aperture of 1.3. The sample rest on a piezoelectric stage with a resolution of 20nm in the x, y and z direction. This optical system can confirm and locate NV centers with a resolution of 200nm.

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