ABSTRACT

Apparatus and methods for photo-excitation processes

Embodiments of the invention provide a method and apparatus for depositing a layer on a substrate. In one embodiment, the method includes exposing a surface of the substrate disposed within a processing chamber to a fluid precursor, directing an electromagnetic radiation generated from a radiation source to a light scanning unit such that the electromagnetic radiation is deflected and scanned across the surface of the substrate upon which a material layer is to be formed, and initiating a deposition process with the electromagnetic radiation having a wavelength selected for photolytic dissociation of the fluid precursor to deposit the material layer onto the surface of the substrate. The radiation source may comprise a laser source, a bright light emitting diode (LED) source, or a thermal source. In one example, the radiation source is a fiber laser producing output in the ultraviolet (UV) wavelength range.

Fig 3.