[0030] In one embodiment, the diffusion-rate-limited thermal CVD applies the thermal CVD coating 101 to have a wavelength range of less than 10 nm, less than 20 nm, less than 30 nm, less than 40 nm, less than 50 nm, less than 100 nm, or any suitable combination, sub-combination, range, or sub-range therein. Suitable wavelengths subject to the wavelength ranges include, but are not limited to, 400 nm, 450 nm, 500 nm, 550 nm, 600 nm, 650 nm, 700 nm, or any suitable combination, sub-combination, range, or sub-range therein.

[0031] Although not intending to be bound by theory, in one embodiment, the diffusion-rate-limited thermal CVD is based upon flux to a surface (J_1), reaction flux (J_2), gas concentration (C_g), concentration on the surface (C_s), gas phase mass transport coefficient (h_g), and surface reaction rate (k_s). In a further embodiment, the relationship is represented by the following equation:

$$v = \frac{C_g}{\frac{1}{h_G} + \frac{1}{k_S}}$$

According to this embodiment, the gas phase mass transport coefficient (h_g) is much ~~greater~~ lower than the surface reaction rate (k_s), resulting in the diffusion-rate-limited thermal CVD. For example, in an even further embodiment, the gas phase mass transport coefficient (h_g) is ~~greater~~ lower than the surface reaction rate (k_s) by a factor of at least 100, 200, 300, 400, 500, 600, 700, 800, 900, 1,000, or any suitable combination, sub-combination, range, or sub-range therein.

[0032] While the invention has been described with reference to one or more embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims. In addition, all numerical values identified in the detailed description shall be interpreted as though the precise and approximate values are both expressly identified.