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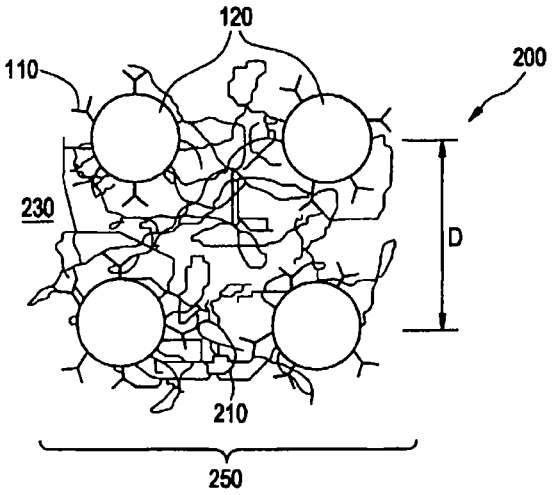
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(54) Title: BROAD SPECTRUM OPTICALLY ADDRESSED SENSOR



(57) Abstract: The present invention relates to a sensor for detecting chemical, biological, biochemical or other environmental stimuli, and includes a plurality of colloidal particles having chemical receptors bound to each particle's surface, wherein when a target stimulus is directed to the bound chemical receptor, the gelled matrix contracts or expands, which changes the lattice constant, thereby changing the pattern of diffracted light in a measurable manner so that the target stimulus' presence can be detected by a spectrometer. The plurality of colloidal particles are composed of a material having a first dielectric constant, and the gel and surrounding medium have a second dielectric constant. The colloidal particles can be assembled using holographic optical tweezers and polymerized to create an integrated sensor array, which diffracts light in a detectable characteristic manner.

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