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(54) **OPTICAL SENSOR FOR ANALYTE DETECTION**

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G01N 21/64 (2006.01)

(52) **U.S. Cl.**
CPC ***G01N 21/63*** (2013.01); ***G01N 21/6428*** (2013.01)

(58) **Field of Classification Search**
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See application file for complete search history.

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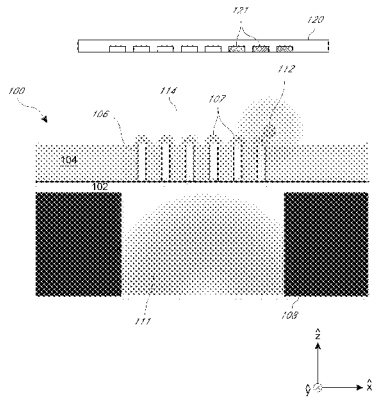
(57) **ABSTRACT**

Devices, systems, and methods for detection of an analyte in a sample are disclosed. In some embodiments, an optical sensor can include a metallic layer and a plurality of dielectric pillars extending through the metallic layer. A plurality of regions of concentrated light can be supported in proximity to the ends of the plurality of dielectric pillars when a surface of the metallic layer is illuminated. Concentrated light within one or more of these regions can interact with an analyte molecule, allowing for detection of the analyte.

23 Claims, 17 Drawing Sheets