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(54) **ARTIFICIAL BAND GAP**

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This patent is subject to a terminal disclaimer.

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(52) **U.S. Cl.** **438/20**; 216/40; 216/54; 216/66; 216/67; 430/199; 430/296; 430/302; 430/310
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(57) **ABSTRACT**

A method is disclosed for the induction of a suitable band gap and electron emissive properties into a substance, in which the substrate is provided with a surface structure corresponding to the interference of electron waves. Lithographic or similar techniques are used, either directly onto a metal mounted on the substrate, or onto a mold which then is used to impress the metal. In a preferred embodiment, a trench or series of nano-sized trenches are formed in the metal.

20 Claims, 7 Drawing Sheets