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(54) **METHOD FOR MAKING A DIODE DEVICE**

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(52) **U.S. Cl.** **438/380**; 438/141; 438/328
(58) **Field of Search** 438/380, 133, 438/141, 328

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(57) **ABSTRACT**

A method for manufacturing a pair of electrodes comprises fabricating a first electrode with a substantially flat surface and placing a sacrificial layer over a surface of the first electrode, wherein the sacrificial layer comprises a first material. A second material is placed over the sacrificial layer, wherein the second material comprises a material that is suitable for use as a second electrode. The sacrificial layer is removed with an etchant, wherein the etchant chemically reacts with the first material, and further wherein a region between the first electrode and the second electrode comprises a gap that is a distance of 50 nanometers or less, preferably 5 nanometers or less. Alternatively, the sacrificial layer is removed by cooling the sandwich with liquid nitrogen, or alternatively still, the sacrificial layer is removed by heating the sacrificial layer, thereby evaporating the sacrificial layer.

7 Claims, 5 Drawing Sheets