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(54) **Title:** INTEGRATED EPITAXIAL METAL ELECTRODES

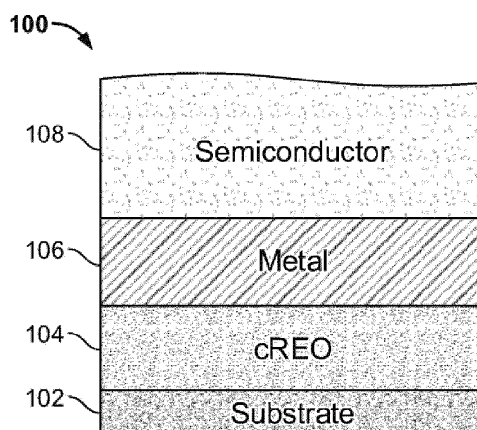


FIG. 1

(57) **Abstract:** Systems and methods are described herein to include an epitaxial metal layer between a rare earth oxide and a semiconductor layer. Systems and methods are described to grow a layered structure, comprising a substrate, a first rare earth oxide layer epitaxially grown over the substrate, a first metal layer epitaxially grown over the rare earth oxide layer, and a first semiconductor layer epitaxially grown over the first metal layer. Specifically, the substrate may include a porous portion, which is usually aligned with the metal layer, with or without a rare earth oxide layer in between.

WO 2020/152302 A1