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(54) **STRUCTURES AND METHODS FOR ENHANCING CAPACITORS IN INTEGRATED CIRCUITS**

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(57) **ABSTRACT**

Systems, devices, structures, and methods are described that inhibit dielectric degradation in the presence of contaminants. An enhanced capacitor in a dynamic random access memory cell is discussed. The enhanced capacitor includes a first electrode, a dielectric coupled to the first electrode, a second electrode coupled to the dielectric, and at least one inhibiting layer that couples to the first electrode, the dielectric, and the second electrode. The inhibiting layer defines a chamber that encloses the capacitor and renders the capacitor impervious to disturbance in its physical or chemical forces in the presence of contaminants. The inhibiting layer includes a nitride compound, an oxynitride compound, and an oxide compound. In one embodiment, the nitride compound includes Si_xN_y. In another embodiment, the oxynitride compound includes SiO_xN_y. In another embodiment, the oxide compound includes Al_2O_3 and $(SrRu)O_3$. The variables x and y are indicative of a desired number of atoms. The dielectric includes an oxide compound. In one embodiment, the oxide compound includes barium strontium titanate.

30 Claims, 16 Drawing Sheets