METHODS OF FORMING A PLURALITY OF TRANSISTOR GATES, AND METHODS OF FORMING A PLURALITY OF TRANSISTOR GATES HAVING AT LEAST TWO DIFFERENT WORK FUNCTIONS

ABSTRACT

A method of forming a plurality of transistor gates having at least two different work functions includes forming first and second transistor gates over a substrate having different widths, with the first width being narrower than the second width. A material is deposited over the substrate including over the first and second gates. Within an etch chamber, the material is etched from over both the first and second gates to expose conductive material of the first gate and to reduce thickness of the material received over the second gate yet leave the second gate covered by the material. In situ within the etch chamber after the etching, the substrate is subjected to a plasma comprising a metal at a substrate temperature of at least 300°C to diffuse said metal into the first gate to modify work function of the first gate as compared to work function of the second gate.

FIGURE 4