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(54) Title: WORK FUNCTION ADJUSTMENT IN HIGH-K GATES STACKS INCLUDING GATE DIELECTRICS OF DIFFERENT THICKNESS

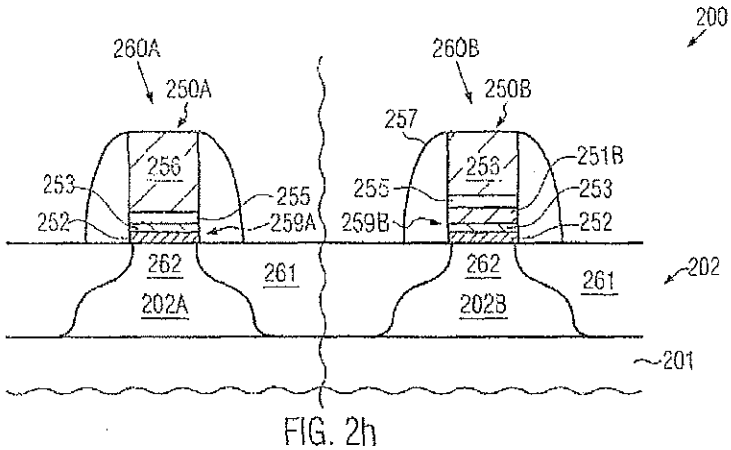


FIG. 2h

(57) Abstract: In sophisticated manufacturing techniques, the work function and thus the threshold voltage of transistor elements may be adjusted in an early manufacturing stage by providing a work function adjusting species (254A) within the high-k dielectric material (253) with substantially the same spatial distribution in the gate dielectric materials of different thickness. After the incorporation of the work function adjusting species (254A), the final thickness of the gate dielectric materials may be adjusted by selectively forming an additional dielectric layer so that the further patterning of the gate electrode structures (250A, 250B) may be accomplished with a high degree of compatibility to conventional manufacturing techniques. Consequently, extremely complicated processes for re-adjusting the threshold voltages of transistors (260A, 260B) having a different thickness gate dielectric material may be avoided.

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