



- [54] **INTEGRATED CIRCUIT
MICRO-FABRICATION USING DRY
LITHOGRAPHIC PROCESSES**
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- [73] Assignee: **Massachusetts Institute of
Technology**, Cambridge, Mass.
- [21] Appl. No.: **924,374**
- [22] Filed: **Jul. 31, 1992**

Related U.S. Application Data

- [63] Continuation of Ser. No. 517,394, Apr. 27, 1990, abandoned, which is a continuation of Ser. No. 149,426, Jan. 29, 1988, abandoned.
- [51] Int. Cl.⁵ **G03C 5/00**
- [52] U.S. Cl. **430/322; 430/297;
430/311; 430/945**
- [58] Field of Search **430/297, 311, 945, 322;
427/450, 452, 455, 322**

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- Primary Examiner*—Thori Chea
- Attorney, Agent, or Firm*—Thomas J. Engellenner; John V. Bianco
- [57]

Dry, laser-based, lithographic techniques and systems for patterning a surface of a wafer or other substrate are disclosed. The techniques and systems are particularly adapted for automated micro-fabrication of integrated circuits on semiconductor wafers. The invention entails dry depositing a resist material on a surface of a substrate, then generating a pattern in the resist material by selectively exposing the resist material to pulsed UV laser radiation, controlling the ambient exposure of the resist material between the resist-depositing and pattern-generating steps, and, finally, transferring the pattern from the resist to the substrate or otherwise employing the pattern to transform the substrate by deposition or implantation of materials.

3 Claims, 4 Drawing Sheets

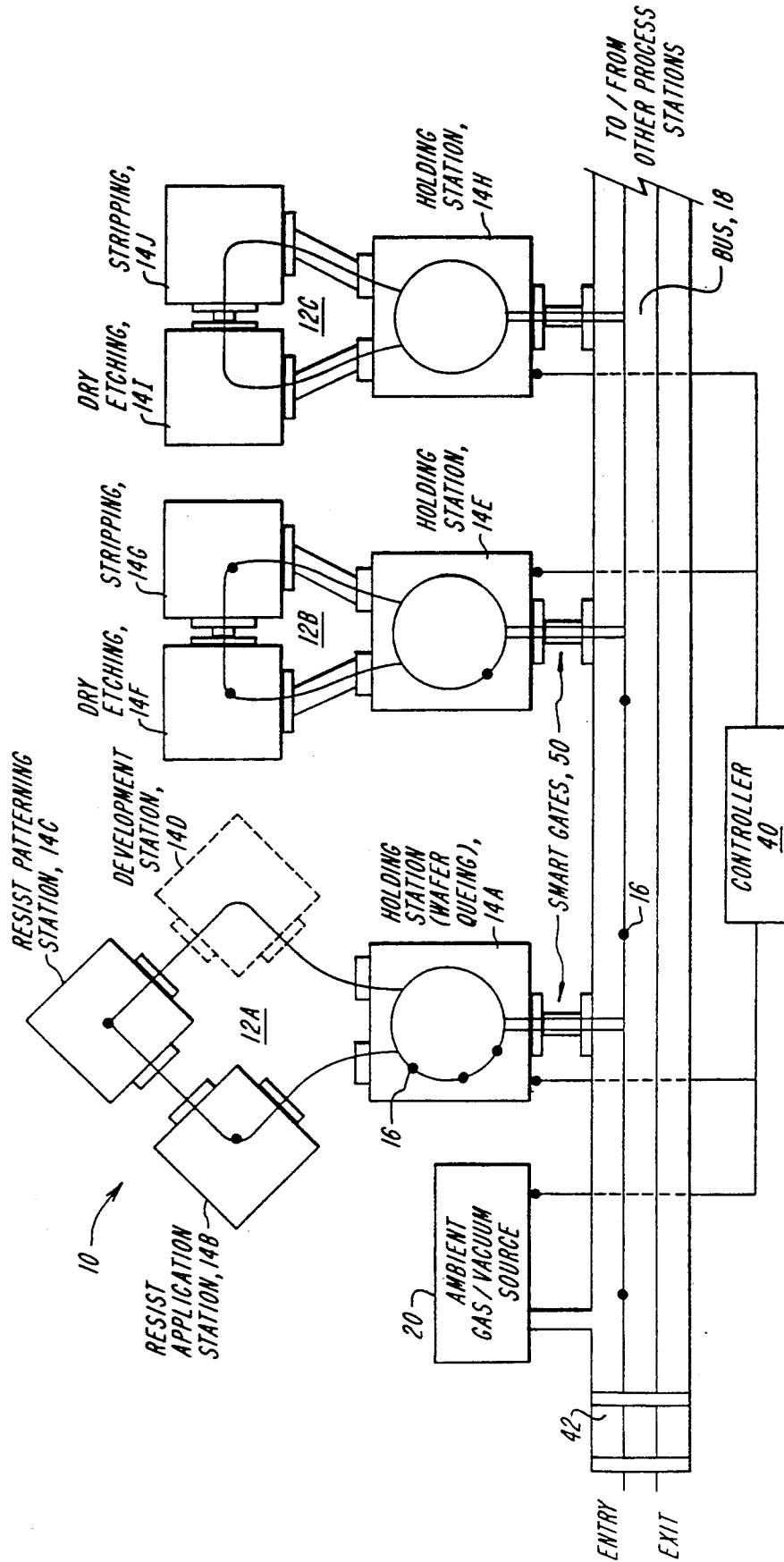


FIG. 1

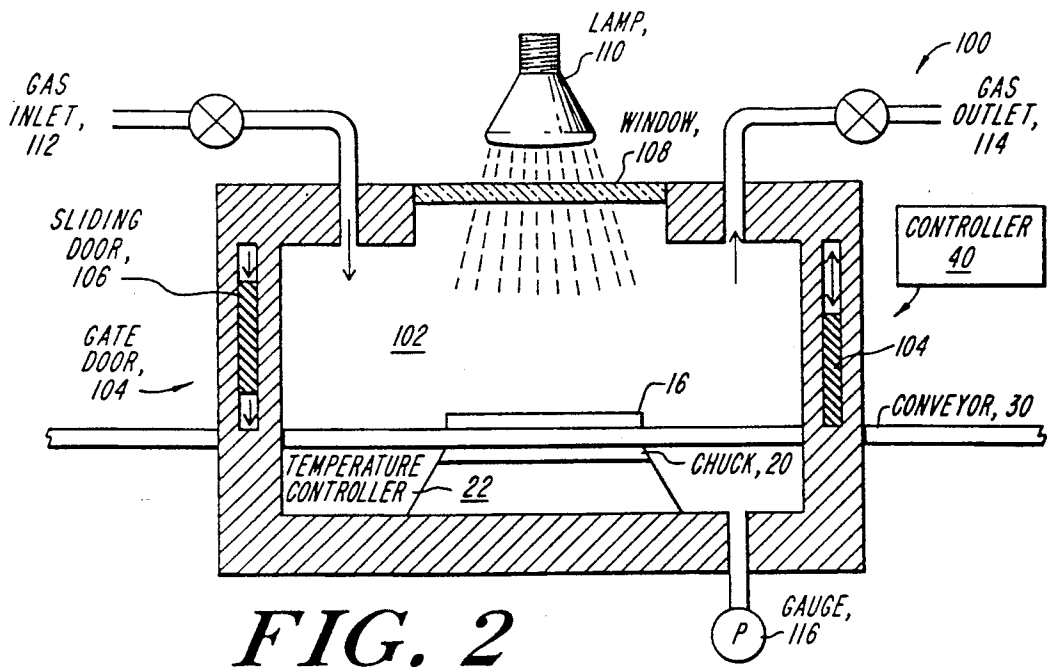


FIG. 2

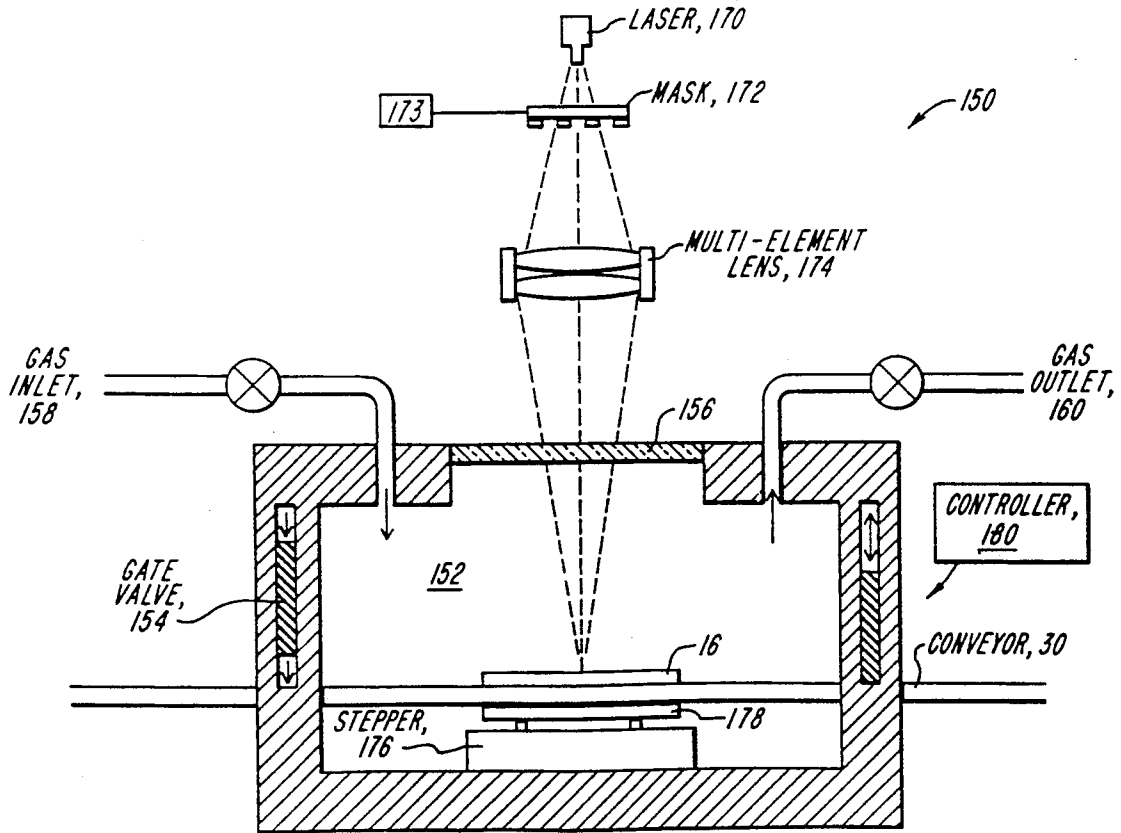


FIG. 3

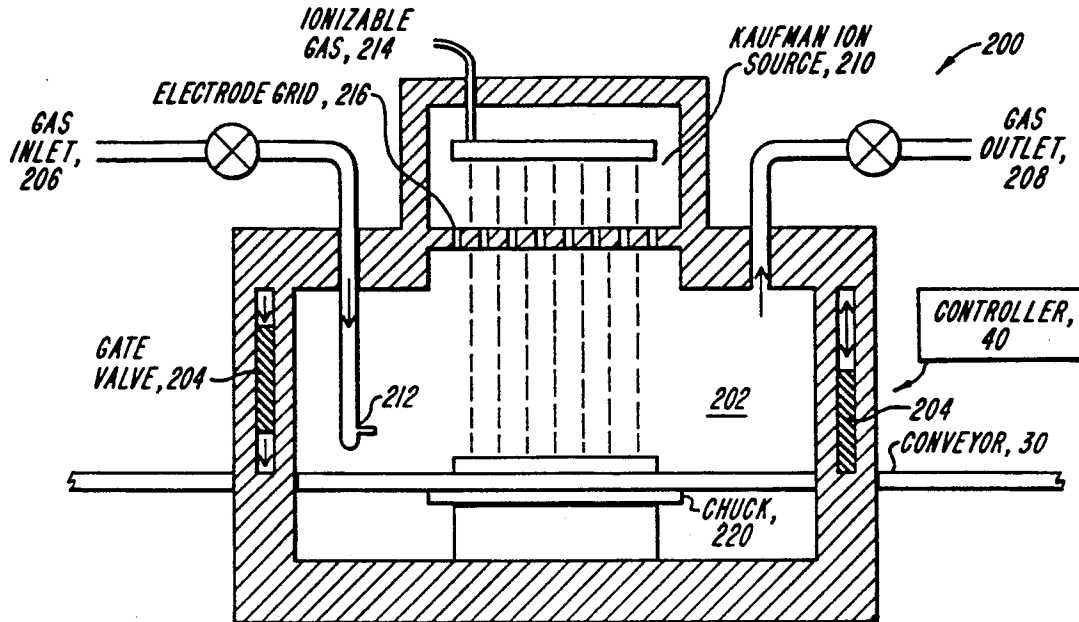


FIG. 4

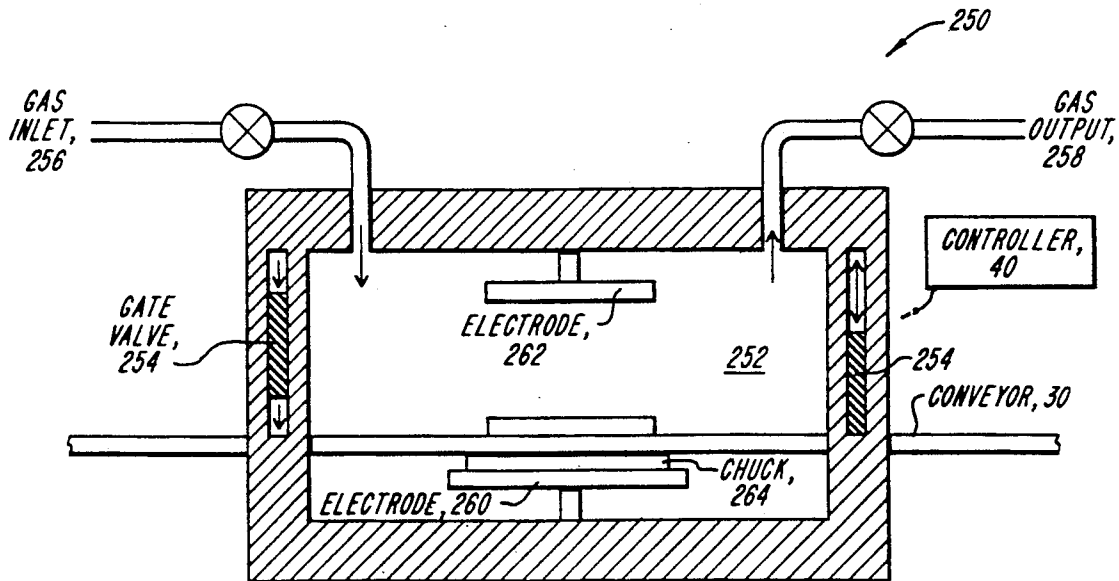
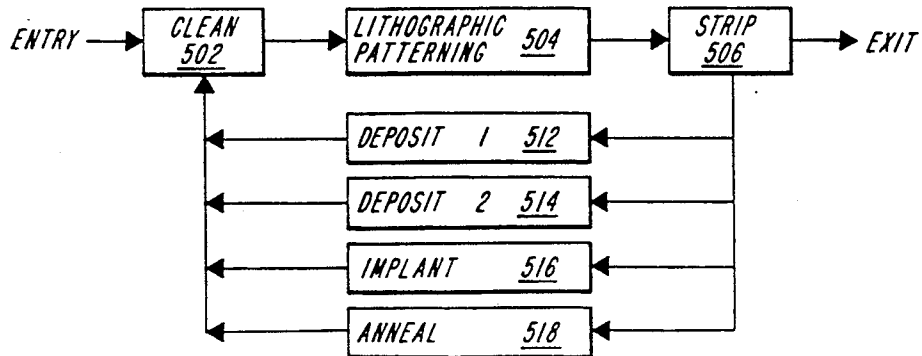
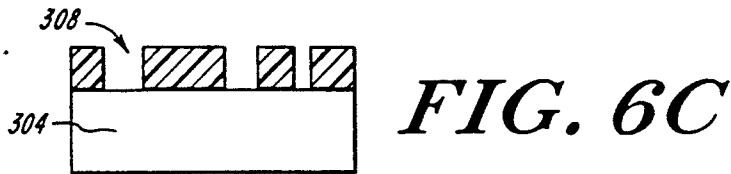
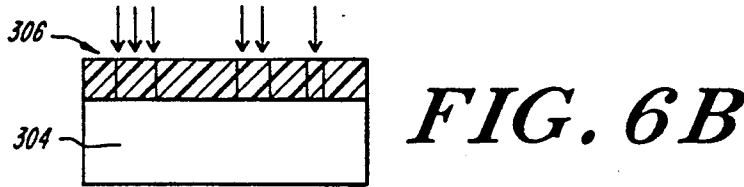
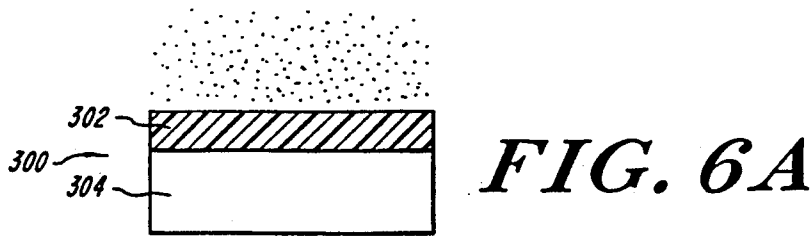


FIG. 5



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