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(72) Inventor; and

(75) Inventor/Applicant (for US only): **BENJAMIN, Neil Martin Paul** [GB/US]; c/o Lam Research Corporation, Legal Department, 4650 Cushing Parkway, Fremont, US 94538 (US).(74) Agent: **NGUYEN, Joseph A.**; P.O. Box 700640, San Jose, California 95170 (US).

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(54) Title: SYNCHRONIZED AND SHORTENED MASTER-SLAVE RF PULSING IN A PLASMA PROCESSING CHAMBER

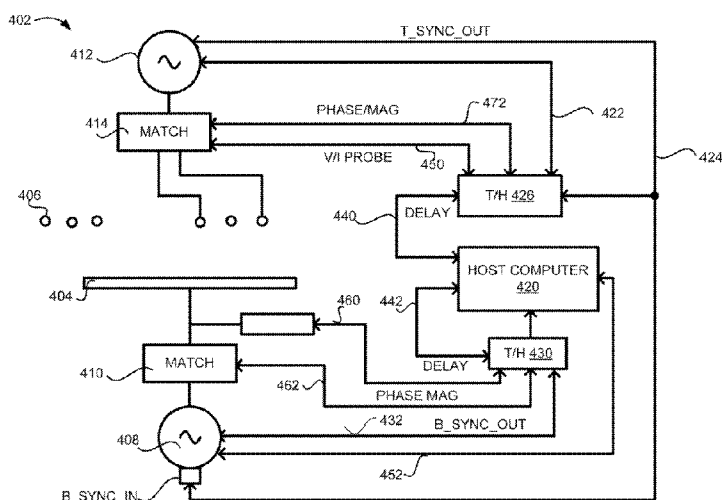


FIG. 4

(57) Abstract: Plasma processing apparatuses and techniques for processing substrates, which include the use of synchronized RF pulsing of a first RF signal and a delayed-and-shortened second RF signal. The first RF signal may be the primary plasma-generating RF signal and the second RF signal may be the RF bias signal or vice versa. Alternatively or additionally, the first RF signal may be the high frequency RF signal and the second RF signal may be the lower frequency RF signal. Either the first RF signal or the second RF signal may act as the master, with the other acting as the slave signal. Alternatively, an external circuit may be employed as a master to control both the first RF signal and the second RF signal as slave signals. Track-and-hold techniques and circuits are provided to ensure accurate measurement for process control and other purposes.