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(54) Title: METHODS OF PROCESSING A SUBSTRATE WITH MINIMAL SCALLOPING

(57) Abstract: The present invention provides methods of processing a substrate with minimal scalloping. By processing substrates with minimal scalloping, feature tolerance and quality may be improved. An embodiment of the present invention provides a method for etching a feature in a layer through an etching mask by alternating steps of polymer deposition and substrate etching in any order. In order to achieve the benefits described herein, process gas pressures between process steps may be substantially equivalent. In some embodiments a continuous plasma stream may be maintained throughout substrate processing. In still other embodiments, process gases may be controlled by a single mass flow control valve so that process gases may be switched to within less than 250 milliseconds.