PATTERN FORMING METHOD

ABSTRACT

~~A pattern is formed on an underlying layer of a target object by a pattern forming method. The pattern forming method includes (a) forming a block copolymer layer, which includes a first polymer and a second polymer and is configured to be self-assembled, on the underlying layer; (b) processing the target object to form a first region containing the first polymer and a second region containing the second polymer in the block copolymer layer; (c) etching the second region partway in a thickness direction of the second region in a capacitively coupled plasma processing apparatus after the processing of the target object; (d) generating secondary electrons from an upper electrode of the plasma processing apparatus by applying a negative DC voltage to the upper electrode and irradiating the secondary electrons onto the target object, after the etching of the second region; and (e) additionally etching the second region in the plasma processing apparatus after the irradiating of the secondary electrons onto the target object.~~

A pattern forming method of forming a pattern on an underlying layer of a target object includes forming a block copolymer layer, which includes a first polymer and a second polymer and is configured to be self-assembled, on the underlying layer; processing the target object to form a first region containing the first polymer and a second region containing the second polymer in the block copolymer layer; etching the second region partway in a thickness direction thereof in a capacitively coupled plasma processing apparatus after the processing of the target object; generating secondary electrons from an upper electrode of the plasma processing apparatus by applying a negative DC voltage to the upper electrode and irradiating the secondary electrons onto the target object, after the etching of the second region; and additionally etching the second region in the plasma processing apparatus after the irradiating of the secondary electrons.

Figure 1