the difference between a target current value I_A recorded during the ascent of the reactive gas flow rate and a target current value I_D recorded during the descent of the reactive gas flow rate is within ±15% of the difference between the target current value I_L at the lower limit of the reactive gas flow rate in the hysteresis region and the target current value I_H at the upper limit of the reactive gas flow rate in the hysteresis region.

3. The method of claim 1 wherein the other layer is sputter deposited while the reactive gas flow rate is set equal to or more than an average value between the lower and upper limits of the reactive gas flow rate in the hysteresis region.

4. The method of claim 1 wherein the reactive gas contains nitrogen (N_2) gas or oxygen (O_2) gas.

5. The method of claim 1 wherein the silicon-containing target is a target consisting of silicon.

6. The method of claim 5 wherein the halftone phase shift film is free of transition metals.