

ABSTRACT

CLEANUP METHOD FOR OPTICS IN IMMERSION LITHOGRAPHY

An immersion lithography apparatus has a reticle stage (RST) arranged to retain a reticle (R), a working stage (9) arranged to retain a workpiece (W), and an optical system including an illumination source (1) and an optical element (PL) opposite the workpiece for having an image pattern of the reticle projected by radiation from the illumination source. A gap is defined between the optical element (4) and the workpiece (W), and a fluid supplying device serves to supply an immersion liquid (7) into this gap such that the supplied immersion liquid contacts both the optical element (4) and the workpiece (W) during an immersion lithography process. A cleaning device (30) is incorporated for removing absorbed liquid from the optical element (4) during a cleanup process. The cleaning device may make use of a cleaning liquid having affinity to the absorbed liquid, heat, a vacuum condition, ultrasonic vibrations or cavitating bubbles for the removal of the absorbed liquid.

(Figure 5)