ABSTRACT

When a gas on at least a part of an optical path for an exposure light beam is substituted with a gas through which the exposure light beam is transmitted, an exposure method makes it possible to perform the substitution stably at less running cost. The gas, which is contained in a gas-tight unit (8) for surrounding, for example, a beam matching unit, an illumination optical system, a reticle stage system, a projection optical system, or a wafer stage system of an exposure apparatus, is substituted with a low absorption gas (GA, GB) through which the exposure light beam is transmitted, by using a gas substitution unit (S). During this process, a step of reducing the pressure of the gas in the gas-tight unit (8) until a first gas pressure lower than the atmospheric pressure is obtained by using a gas aspirator (7), and a step of filling the interior of the gas-tight unit (8) with the low absorption gas (GA, GB) until an intermediate gas pressure between the first gas pressure and the atmospheric pressure is obtained are repeated a predetermined number of times. Subsequently, the interior of the gas-tight unit (8) is filled with the low absorption gas (GA, GB) until a gas pressure approximate to the atmospheric pressure is obtained.