

ABSTRACT

A laser irradiation apparatus (1) according to an embodiment includes a laser generation device (14) configured to generate laser light, a levitation unit (10) configured to levitate an object to be processed (16) to which the laser light is applied, and a conveyance unit (11) configured to convey the levitated object to be processed (16). The conveyance unit (11) includes a holding mechanism (12) for holding the object to be processed (16) by absorbing the object to be processed (16), and a moving mechanism (13) for moving the holding mechanism (12) in a conveyance direction. The holding mechanism (12) includes a base (153) including a plurality of through holes (152), a plurality of pipes (145) each of which is connected to a respective one of the plurality of through holes (152), a vacuum generation device (144) configured to evacuate air from the plurality of pipes (145), and a plurality of absorption assistance valves (150) each of which is disposed in the middle of a respective one of the plurality of pipes (145), each of the plurality of absorption assistance valves (150) being configured to be closed when a flow rate of a gas flowing into the pipe (145) through the through hole (152) becomes equal to or higher than a threshold.

[Fig. 9]