

BEAM HOMOGENIZER, LASER IRRADIATION APPARATUS, AND METHOD
FOR MANUFACTURING SEMICONDUCTOR DEVICE

ABSTRACT OF THE DISCLOSURE

The present invention provides a beam homogenizer being able to form a rectangular beam spot having homogeneous energy distribution in a direction of its major axis without using the optical lens requiring to be manufactured with high accuracy. In addition, the present invention provides a laser irradiation apparatus being able to irradiate the laser beam having homogeneous energy distribution in a direction of its major axis. Furthermore, the present invention provides a method for manufacturing a semiconductor device being able to enhance crystallinity in the surface of the substrate and to manufacture TFT with a high operating characteristic.

The beam homogenizer, one of the present invention, is to shape the beam spot on the surface to be irradiated into a rectangular spot having an aspect ratio of 10 or more, preferably 100 or more, and comprises an optical waveguide for homogenizing the energy distribution of the rectangular beam spot in the direction of its major axis.

(Fig. 1A)