Claims

1. A method of producing a coated semiconductor wafer of monocrystalline silicon, comprising
the providing of a substrate wafer of monocrystalline silicon having a diameter of not less than 300 mm;
the placing of the substrate wafer atop a susceptor of an apparatus for coating individual wafers, wherein the apparatus has an upper cover with an annular region which concentrates radiation transmitted through the annular region in an edge region of the substrate wafer;
the heating of the substrate wafer to a deposition temperature by means of a radiation source arranged above the upper cover of the apparatus;
the depositing of an epitaxial layer of silicon by passing process gas comprising hydrogen and a deposition gas over the heated substrate wafer, where the deposition gas comprises dopant and a silicon source, characterized in that the process gas further comprises inert gas and hydrogen and inert gas in a volume ratio of not less than 6 and not more than 20 are passed over the heated substrate wafer.

2. The method as claimed in claim 1, wherein the edge region of the substrate wafer has a distance of up to 15 mm from an edge of the substrate wafer.

3. The method as claimed in claim 1 or claim 2, wherein the cross section through the annular region of the upper cover has upward convex curvature or the outline of a Fresnel lens.