structures with a large height-to-width ratio can produce a very strong capillary effect, which makes the removal of the coating material from the structures impossible. In addition, all types of masking techniques are very labor-intensive and costly, in particular since a relatively large number of process steps must be performed. An increasing number of process steps increases not only the costs, but also the susceptibility to errors.

Another approach in the semiconductor industry is the so-called microcontact printing (μCP). A technical problem lies in the fact that a μCP stamp must be adapted to transfer a material to the structures of the product wafers that are to be coated. For each new type of product wafer, a new stamp must be manufactured. In addition, the problem lies in the fact that in a first process step, a μCP stamp must be immersed in the material that is to be transferred or must be impregnated with the material from its rear side. Subsequently, an exact alignment of the μCP stamp is carried out relative to the raised structures of the product wafer. In another, third process step, the transfer of the material from the μCP stamp to the areas of the product wafer that are to be coated is carried out.

Embodiments of this invention disclose a method and a device, with which the partial coating of product substrates can be achieved in an economical manner with as few as possible, preferably simple, process steps. The method and the device are to be as universally usable as possible and/or to have as high a throughput as possible.

According to a first aspect of the present invention, there is provided a method for coating a projecting surface of discrete projections of a product substrate having functional units that are arranged at least partially in recesses, the method comprising the steps of: bringing the projecting surface into contact with a coating material that is applied on a carrier substrate, separating the carrier substrate from the projecting surface such that the coating material remains partially on the product substrate, wherein the carrier substrate is separated partially and in steps from the projecting surface, wherein after and/or during contact a force loading is carried out to attach the coating material to the projecting surface, and wherein the force loading is carried out on the side of the carrier substrate facing away from the contact by a moving force transfer means), wherein the coating material is a polymer and the temperature during the application of the force is above the glass transition temperature of the polymer.

According to a second aspect of the present invention, there is provided a device for coating a projecting surface of discrete, projections of a product substrate having functional units that are arranged at least partially in recesses, the device comprising: contacting means for bringing the projecting surface into contact with a coating material that is applied on a carrier substrate, separating means for separating the carrier substrate from the projecting surface such that the coating material remains partially on the product substrate, wherein the carrier substrate is separated partially and in steps from the projecting surface, wherein after and/or during contact a force loading is carried out to attach the coating material to the projecting surface, and wherein the force loading is carried out on the side of the carrier substrate facing away from the contact by a moving force transfer means), wherein the coating material is a polymer and the temperature during the application of the force is above the glass transition temperature of the polymer.

All combinations of at least two of the features indicated in the specification, the claims, and/or the figures also fall within the scope of the invention. In the indicated ranges of

CLAIMS

1. A method for coating a projecting surface (5o, 5o') of discrete projections (5, 5') of a product substrate (3, 3') having functional units (6) that are arranged at least partially in recesses (7), the method comprising the steps of:

bringing the projecting surface (5o, 5o') into contact with a coating material (2, 2') that is applied on a carrier substrate (1),

separating the carrier substrate (1) from the projecting surface (5o, 5o') such that the coating material (2, 2') remains partially on the product substrate (3, 3'), wherein the carrier substrate (1) is separated partially and in steps from the projecting surface (5o, 5o'), wherein after and/or during contact a force loading is carried out to attach the coating material (2, 2') to the projecting surface (5o, 5o'), and wherein the force loading is carried out on the side of the carrier substrate (1) facing away from the contact by a moving force transfer means (12), wherein the coating material (2, 2') is a polymer and the temperature during the application of the force is above the glass transition temperature of the polymer.

2. The method according to Claim 1, wherein the functional units (6) of the product substrate (3, 3') are arranged predominantly in recesses (7).

3. The method according to one of Claims 1 or 2, wherein the coating material (2, 2') that remains on the product substrate (3, 3') remains at least predominantly on the projecting surface (5o, 5o').

4. The method according to Claim 3, wherein the coating material (2, 2') that remains on the product substrate (3, 3') remains exclusively on the projecting surface (5o, 5o').

5. The method according to one of the preceding claims, wherein the functional units (6) are not exposed to the coating material (2, 2') at least on the sections that lie in the recesses.

6. The method according to one of the preceding claims, wherein a flexible carrier film is used as a carrier substrate (1).

7. The method according to one of the preceding claims, wherein the force loading is carried out by means of a first force F_1 and a second force F_2, that is opposite the first force F_1.

8. The method according to one of the preceding claims, wherein after the separation, an encapsulation of the functional units (6) is carried out by bonding at least one cover (8, 8') to the projecting surface (5o, 5o') by means of the coating material (2, 2').

9. A device for coating a projecting surface (5o, 5o') of discrete, projections (5, 5') of a product substrate (3, 3') having functional units (6) that are arranged at least partially in recesses (7), the device comprising:

contacting means for bringing the projecting surface (5o, 5o') into contact with a coating material (2, 2') that is applied on a carrier substrate (1),

separating means for separating the carrier substrate (1) from the projecting surface (5o, 5o') such that the coating material (2, 2') remains partially on the product substrate (3, 3'), wherein the carrier substrate (1) is separated partially and in steps from the projecting surface (5o, 5o'), wherein after and/or during contact a force loading is carried out to attach the coating material (2, 2') to the projecting surface (5o, 5o'), and wherein the force loading is carried out on the side of the carrier substrate (1) facing away from the contact by a moving force transfer means (12), wherein the coating material (2, 2') is a polymer and the temperature during the application of the force is above the glass transition temperature of the polymer.

10. The device according to Claim 9, wherein the functional units (6) of the product substrate (3, 3') are arranged predominantly in recesses (7).