CLAIMS

1. A universal chip batch-bonding apparatus, comprising a material pick-and-place area and a transfer work area, wherein

the material pick-and-place area comprises a blue tape pick-and-place section for providing chips and a substrate pick-and-place section for storing a substrate, the blue tape pick-and-place section and the substrate pick-and-place section being disposed at opposing ends of the transfer work area, respectively;

the transfer work area sequentially comprises a chip pickup and separation section, a chip alignment and fine-tuning section, and a chip batch-bonding section along a direction from the blue tape pick-and-place section to the substrate pick-and-place section; and

a chip carrying board conveyor is disposed in the transfer work area and arranged across the transfer work area, the chip carrying board conveyor moving between the chip pickup and separation section, the chip alignment and fine-tuning section, and the chip batch-bonding section to deliver materials,

wherein a separation platform, a flip hand, and a pick-and-place apparatus are provided in the chip pickup and separation section; a fine tuning apparatus is provided in the chip alignment and fine-tuning section; and a carrying platform is provided in the chip batch-bonding section.

2. The universal chip batch-bonding apparatus of claim 1, wherein the chip carrying board conveyor comprises a first moving platform, a pressurizing apparatus mounted on the first moving platform, and a carrying board mounted on the pressurizing apparatus.

3. The universal chip batch-bonding apparatus of claim 1, wherein the pick-and-place apparatus comprises a support, a shifting unit mounted on the support and movable in a horizontal direction, a lifting unit mounted on the shifting unit and movable in a vertical direction, and a pick-and-place hand fixedly mounted on the lifting unit.

4. The universal chip batch-bonding apparatus of claim 3, wherein a first alignment system is mounted on the lifting unit.

5. The universal chip batch-bonding apparatus of claim 4, wherein the fine tuning apparatus comprises a second moving platform as well as a fine tuning robotic arm and a second alignment system mounted on the second moving platform.

6. The universal chip batch-bonding apparatus of claim 5, wherein a third alignment

system is mounted on the carrying platform.

7. The universal chip batch-bonding apparatus of claim 3, wherein a plurality of lifting units are mounted on the shifting unit, and each lifting unit has one pick-and-place hand mounted therebeneath.

8. The universal chip batch-bonding apparatus of claim 1, wherein a chip holder and a first robotic arm are provided in the blue tape pick-and-place section, and the first robotic arm picks up chips on the chip holder and delivers the chips to the separation platform.

9. The universal chip batch-bonding apparatus of claim 1, wherein a substrate store and a second robotic arm are provided in the substrate pick-and-place section; and the second robotic arm picks up a bonding-completed substrate on the carrying platform, and transfers the substrate to the substrate store.

10. The universal chip batch-bonding apparatus of claim 1, wherein an ejecting mechanism is provided under the separation platform for pushing up the chip placed on the separation platform.

11. A universal chip batch-bonding method, used with the universal chip batch-bonding apparatus of claim 1, and comprising the following steps:

S1: transferring chips from a blue tape pick-and-place section to a chip pickup and separation section;

S2: picking up a plurality of the chips from the chip pickup and separation section, and simultaneously delivering the plurality of the chips to a chip alignment and fine-tuning section by a chip carrying board conveyor, for adjustment of position accuracy; and

S3: after the adjustment is completed, delivering the plurality of the chips to a chip batch-bonding section by using the chip carrying board conveyor, to implement batch bonding.

12. The universal chip batch-bonding method of claim 11, wherein in step S2, if marks of the chips are required to face downwards during bonding, chips are picked up and flipped by a flip hand in the chip pickup and separation section and then are transferred to the chip carrying board conveyor; and if marks of the chips are required to face upwards during bonding, chips are picked up by a pick-and-place apparatus in the chip pickup and separation section and then are transferred to the chip carrying board conveyor after being subjected to accuracy adjustment in the chip alignment and fine-tuning section.