Fig. S1 Laser cutting microwire.



Fig. S1 Laser cutting microwire. Related to Figure 1.

(**A and B**) Low (A) and high (B) magnifications of the image show the laser cutting and de-insulation of one microwire. The white bar indicates 1 millimeter.

Fig. S2 Preparation of microwire bundles.



Fig. S2 Preparation of microwire bundles. Related to Figure 1.

- (A) A 2*4 silica capillary tube matrix for microwire guide.
- (B) A 2*2 tungsten wire bundle fixed with epoxy resin.
- (C) Schematic illustration of the tips space ensures end alignment .
- (**D**) The tip configuration of one 2*2 microwire bundle.



Fig. S3 PCB layout. Related to Figure 1.

- (A) All layers of PCB.
- (**B**) Preview of PCB bottom layer.
- (C) Preview of PCB top layer.

Fig. S4 Die component.



Fig. S4 Die component. Related to Figure 1.

- (A) Circuit board array.
- (**B**) Drilled steel sheet.
- (C) Mask.

Fig. S5 Critical process of electrode assembling.



Fig. S5 Critical process of electrode assembling. Related to Figure 1.

- (A) Penetration microwire. The white bar indicates 1 millimeter.
- (B) Coating solder paste.
- (C) Remove mask.
- (D) Reflow welding.
- (E) Penetration of optical fiber and reinforcement.