WHAT IS CLAIMED IS:

1. An optical interposer for chip connection, comprising:

a first total internal reflective layer;

a waveguide, and

a second total internal reflective layer,

wherein:

the optical interposer is grown at a desired position directly above a first photonic integrated circuit chip and a second photonic integrated circuit chip in a semiconductor manufacturing process of the first and second photonic integrated circuit chips to form a light-transmission interface for coupling with the first photonic integrated circuit chip and the second photonic integrated circuit chip; and

refractive indices of the first total internal reflective layer and the second total internal reflective layer are smaller than a refractive index of the waveguide, allowing a light signal to perform repetitive total internal reflections at junctions between materials and advance in a zigzag shape within the waveguide, and further transmit between the first photonic integrated circuit chip and the second photonic integrated circuit chip.

2. The optical interposer for chip connection according to claim 1, further includes a first tilted reflective surface and a second tilted reflective surface located at both sides of the optical interposer, allowing the light signal to be emitted upwards from the first photonic integrated circuit chip, totally reflected through the first tilted reflective surface and transmitting forward, and then totally reflected downwards through the second tilted reflective surface and entering the second photonic integrated circuit chip.

3. The optical interposer for chip connection according to claim 1, wherein between the first photonic integrated circuit chip and the second photonic integrated circuit chip are a plurality of the optical interposers coupling a plurality of nodes of the first photonic integrated circuit chip and a plurality of nodes of the second photonic integrated circuit chip, a layout of the optical interposers being interleaving without causing mutual interference between light signals.