

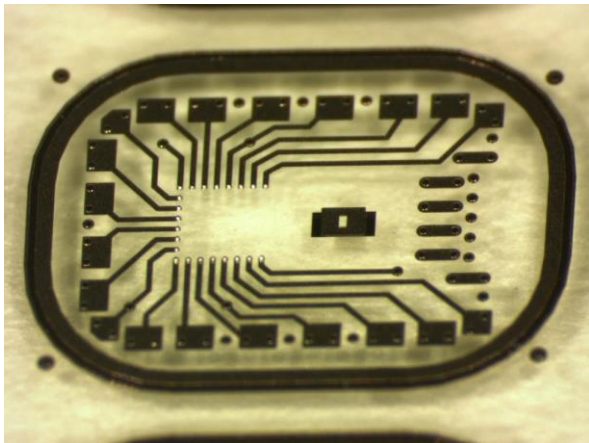
## WLP and TGV for Glass in 5G and RF Applications

The extension of mobile network worldwide and the rise of IoT have promoted the innovation in 5G and RF technologies. 5G and later on 6G technology will enable mobile to move beyond consumer and enterprise use into industries including transportation, logistics, manufacturing, utilities and agriculture.

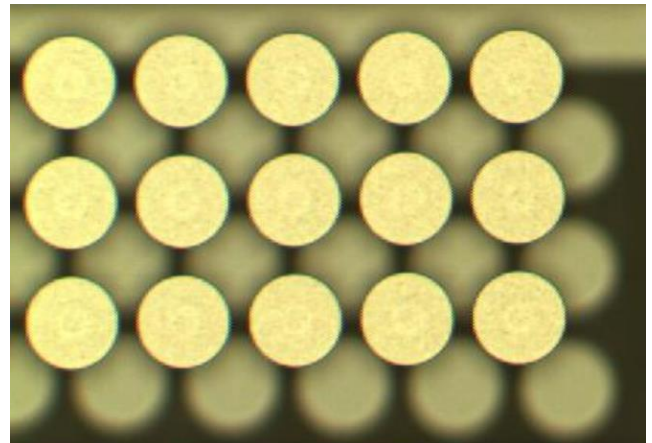
Glass as a common material in our daily life has grown to become even more omnipresent via the new development in the recent years of Semiconductor industry. Some applications have established matured technologies with glass such as microfluidics, sensors and CIS, but with its superior properties as well as easier handling and adaptation into existing manufacturing capabilities than other alternatives for Silicon, glass has gained its focus in FOWLP and RF technologies.

As a leading player in Wafer Level Packaging technologies, PacTech has been engaging in new capabilities such as WLP on glass and glass interposer. Electroless NiAu UBM, solder bumping, Cu pillar and TGV are some of the PacTech's WLP technologies used in RF applications.

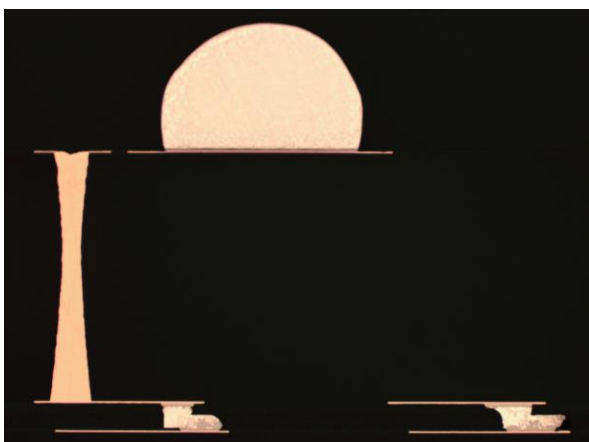
PacTech is in cooperation with IHP, a German research institute specialised in research and development of silicon-based systems, highest-frequency integrated circuits, and technologies for wireless and broadband communication. The Cu-pillar and solder bump technologies have been applied to IHP chips as fan-out interconnection for large array, high power, high-performance RF packages.



RDL and Antenna on Glass



Double-sided area array configuration of bond pads on glass



Cu via interconnect and solder bump on Glass Interposer