The JUNO (Jiangmen Underground Neutrino Observatory) requests the photo detector PMT (Photomultiplier Tube) with effective large area and high quantum efficiency. The researchers in IHEP designed a new type of MCP-PMT in 2009, and produce the prototype in 2015.

The small MCP unit instead of the large Dynode, the transmission and reflection photocathode were assembled in the same glass shell to form nearly 4π photocathode effective area to enhance the efficiency of the photoelectron detecting.