

Taxonomy relating to microfluidic packaging and interconnections

Microfluidic chip:

Microfluidic chip: A complex set of integrated fluidic components and their interconnections on a planar substrate, created by etching, imprinting, moulding etc.

Port: access point on a chip for fluidic contacts

Microfluidic Interfacing:

Support: A shallow flat receptacle with a raised edge or rim, used for carrying, holding, or displaying one or more microfluidic chips

Interface: A system of components that allows a microfluidic chip to be coupled to macro scale fluid, electrical, optical and thermal systems

Microfluidic packaging: The technology relating to the establishment of fluidic, optical and/or electrical interconnections and appropriate housing for a microfluidic chip.

Chip holder: provides mechanical protection of the chip and at least interconnection of electrical / optical signals and / or fluids. It contains an interface, support and housing. It can also provide distribution of electrical energy (that is, power) for circuit function, and dissipation of heat generated by circuit function. The device is reusable.

Package: as chip holder, but is not intended to be reusable.

Cartridge: A modular unit designed to be inserted into a larger piece of equipment. It integrates by assembly several microfluidic components like pumps, sensors, filters etc.

Optical window: An opening constructed in a package that functions to admit optical signal to and from a microfluidic chip in the package.

Microfluidic Connector:

Connector: An arrangement of components that facilitate exchange of fluidics between devices. A seal and a connector can be one and the same component or a seal can be a separate component. Connectors provide an amount of compression onto the fluidic seals to retain the fluid within the system, or are a vehicle for housing a non-compression seal.

Connector types

Seal: A seal is normally a sub-system of a connector comprising a component or components arranged at the end of a fluid path and when typically used with a connector will retain fluid within a microfluidics system.

Ferrule: A metal, polymer or Elastomer ring, tube or cap, (or a multiple arrangement thereof) placed at or fastened to the end of a tube, when pressed against a suitable mating surface with a threaded fitting, or other clamping device, will facilitate a fluid connection. Contact between ferrule and the tube will be with the outside diameter (OD) of the tube. Fluid seal to mating device (chip) will occur at the face of the tube and/or ferrule perpendicular to the tube axis.

Gasket: A gasket is a mechanical seal that fills the space between two mating surfaces, generally to prevent leakage from or into the joined objects while under compression. Gaskets allow "less-than-perfect" mating surfaces on machine parts where they can fill irregularities. Gaskets are commonly produced by cutting from sheet materials, such as gasket paper, rubber, metal, cork, felt, neoprene, Polytetrafluoroethylene (otherwise known as PTFE) or a plastic polymer (such as polychlorotrifluoroethylene).

Nipple: A metal or polymer cylindrical or cone shaped device intended to provide an interference with the inside surface of elastomeric tube, facilitating a fluid connection.