

## **PARYLENE TYPES AND DEPOSITION RATES**

### **Parylene Type**

The NanoFab provides two types of Parylene; Parylene N and Parylene C.

**Parylene N** is the basic member of the series. Parylene N is poly-P-xylylene, a completely linear, highly crystalline material. Parylene N molecules are extremely elastic and will bounce around many times before depositing and polymerizing. This results in a greater penetration into small openings than other types of Parylene. The expected increase of pressure in the deposition chamber during a coating run is controlled at a higher pressure than the other Parylenes.

**Parylene C** is produced from the same monomer modified only by the substitution of a chlorine atom for one of the aromatic hydrogens. Parylene C molecules are less elastic than N molecules and bounce around considerably less than N. The pressure in the Deposition Chamber due to Parylene C monomer is controlled at a value of approximately one half that for Parylene N.

### **Deposition Rate**

How fast Parylene deposits onto a substrate is of primary concern. The proper deposition rate will give an acceptable coating in the shortest possible time. Generally, the slower the deposition, the more uniform and clear the Parylene will be. From the standpoint of coating quality, you cannot coat too slowly, but coating too quickly can cause cloudy or whitish Parylene and uneven coating thickness. For Parylene C, the deposition rate will typically be about 5um per hour (0.0002” per hour); for Parylene N, 762 nm per hour (0.00003 “per hour). The deposition rate is indirectly controlled by regulating the pressure in the deposition chamber.