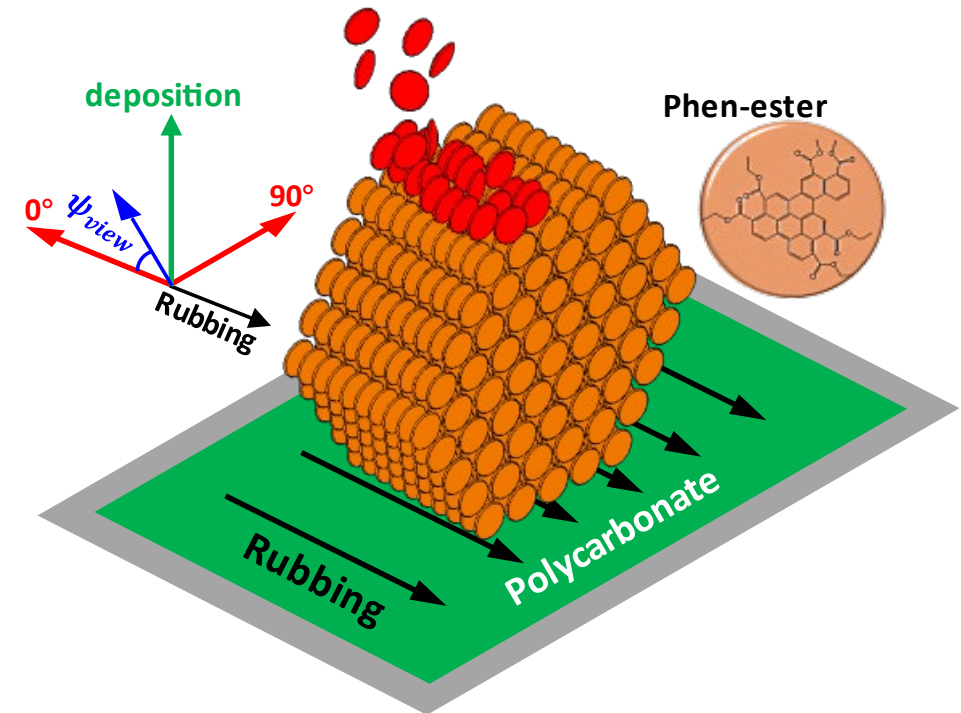


While most glassy materials are formed by cooling a liquid, glasses can also be prepared by depositing molecules from the vapor phase directly into a solid film. This vapor deposition process is used with organic semiconductors to produce organic light emitting diode (OLED) displays which are found in most smart phones. OLED glasses are anisotropic: their molecules are aligned, instead of pointing in random directions. Anisotropy increases the display efficiency.

Researchers in the Wisconsin MRSEC have shown that depositing onto an alignment substrate creates better glass films that are anisotropic *biaxially*, meaning they are aligned in the plane of the substrate as well as out of plane. The in-plane orientation of the molecules effect how they interact with light and conduct electricity. In general, more alignment is better for applications ranging from flexible transistors to OLEDs to organic photovoltaics.



Wisconsin MRSEC researchers deposited an organic semiconductor (Phen-ester, represented by small disks) from the vapor, onto an alignment substrate of rubbed polycarbonate to produce a biaxially anisotropic glass.