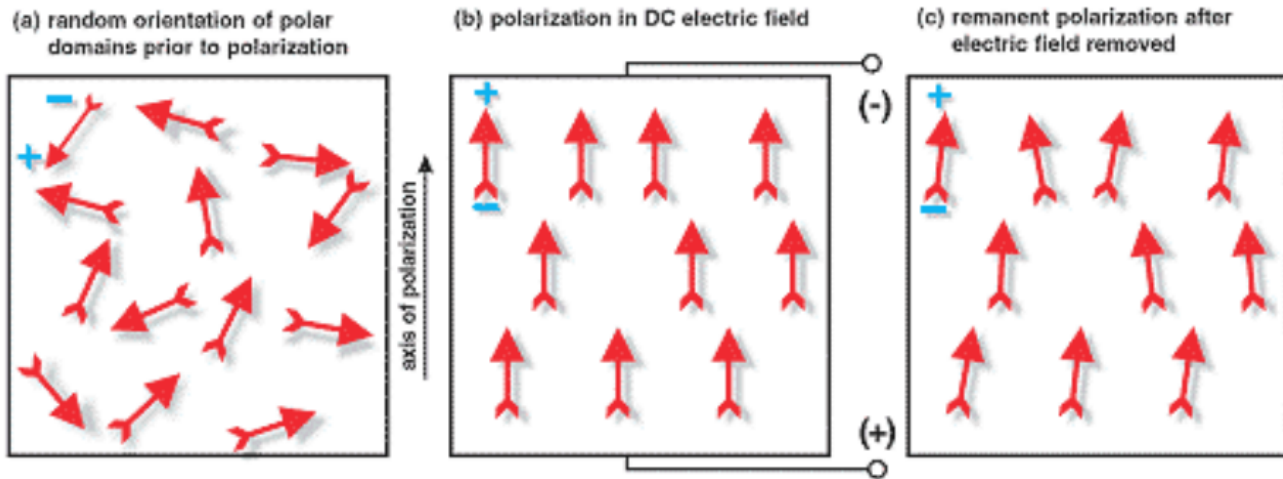


# Electrical Poling Capability

Electrical poling is a process to align the dipole to create polarization by applying an external electric field.



There are two types of electrical poling, contact poling and corona poling.

[Contact poling](#) is performed by placing the piezoelectric material (i.e., films) between two electrodes with both sides having close contact to the film surface. The advantage of this method is that the poling field is well controlled. The drawback of this method is that the poling field is often limited by the breakdown strength of the film and the setup of the electrodes. This could be an issue especially when poling with large film area. Often, surface deposited or printed electrodes are provided to reach a high poling field.

[Corona poling](#) is achieved by exposing the piezoelectric film in a corona discharge environment with one side back to the ground electrode. Ions or electrons, depending on the polarity of the corona discharge voltage, are deposited on the film surface to form the poling field. This method does not require electrode preparation and is amenable to film imperfections, thus can pole large area. The disadvantage is that the poling field is often not known. The result of corona poling is often checked by follow-up characterizations (i.e., d33, d31).

Solvay electrical poling capability is listed below. More detailed poling capability information can be found in this [presentation](#).

Poling Capability	Capability Description	Solvay Labs
<b>Electrode Preparation</b>	<ul style="list-style-type: none"> <li>- Printable Area                             <ul style="list-style-type: none"> <li>* Substrate &lt; 0.5 mm thickness: 210 mm x 315 mm</li> <li>* Substrate 0.5 ~ 25 mm thickness: 210 mm x 260 mm</li> <li>* 300 ~ 600 nm electrode thickness per layer</li> </ul> </li> <li>- Commercially available Inkjettable silver inks                             <ul style="list-style-type: none"> <li>* Sun chemical Suntronic</li> <li>* Genes'ink Nano silver Ink</li> <li>* Hareus Pedot PSS HC</li> <li>* Agfa Pedot PSS)</li> </ul> </li> </ul>	R&I Bollate
<b>Contact Poling</b>	<ul style="list-style-type: none"> <li>- Contact poling voltage: up to 10 kV (higher voltage in development)</li> <li>- Contact poling frequency: DC to 5 kHz, existing experience at DC</li> <li>- Poling temperature: room temperature</li> <li>- Poling chamber electrodes: 1 ~ 8 cm in diameter</li> </ul>	R&I Bollate
<b>Corona Poling</b>	<ul style="list-style-type: none"> <li>- Corona poling voltage: up to +/-30 kV</li> <li>- Grid control voltage: up to +/- 8kV</li> <li>- Corona poling frequency: DC</li> <li>- Poling temperature: room temperature to 135 degC</li> <li>- Poling area: TBD</li> </ul>	ADL Alpharetta