**What are electrets?**

**Electrets:** dielectric materials exhibiting quasi permanent electric charge

- a) Space charge polarization near the electrodes.
- b) Bulk charges trapped inside material at the interfaces or due to migration.
- c) Dipolar polarization due to polar molecules.
Where we use electrets?

**Electret** properties are important for applications such as:

- Microphones
- Solar cells
- Dosimeters
- Piezoelectrical transducers
- Gas Filters
How we can improve electret properties?

**Blends**
- Aim: To increase conformational disorder

**Morphology**
- Aim: To delay charge carriers drift

**Traps**
- Aim: Formation of deep traps

**Blends**
- Aim: To increase conformational disorder
RESULTS

Improving electret properties

1. Modifying the polymer electret matrix itself or by additives (stabilizers, nucleating agents)

Norm. Surface Potential

Annealing time at 90°C (min)
2. Development of cellular space charge electrets

Obstruction of the charge drift by the cavities within the film

**RESULTS**

Improving electret properties
3. Blending

PPE/PS

Larger degree of molecular packing compared with neat polymers

PPE/PS/SIBS

Immiscible blend morphology

Surface potential

Annealing time at 90°C (min)

Surface potential (V)