Coatings deposition from liquid HMDSO films via conversion in dielectric barrier discharges

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DBD in closed vessel with large buffer volume

Time-dependent parameters:
- Oxygen partial pressure
- Monomer partial pressure
- Evaporation rate
- …

Plasma
Polymerization
Oxidation
Evaporation
Adsorption
liquid HMDSO
Substrate
Microscopic results

**Optical microscopy**

**Confocal laser-scanning microscopy**

- **Reference**
- **Al sheet**
- **PE foil**
Spectroscopic results

ATR-FTIR

UV / VIS

GPC

SIMS
Former use of liquid phases in plasma-based film deposition

- Plasma Curing of PDMS

Ott et al., Contrib. Plasma Phys. 2012, 52, 593-600
Former use of liquid phases in plasma-based film deposition

- Liquid Assisted – Plasma Enhanced Chemical Vapour Deposition

Plasma-Enhanced Chemical Solution Deposition

**Plasma phase**
- Dissociation
- Polymerisation
- Cluster / Aerosols
- ...

**Liquid phase**
- UV photoinitiation
- Thermal initiation
- Cross-linkers
- Particles, pigments, …

**Interphase**
- Electrons
- Radicals
- Metastables
- Polymerization
- Etching
- Chain scission

**Exchange processes**
- Evaporation
- Condensation
- Charging
- Heating

**Substrate**
- liquid formulation