

**European Summer School "PPST-Plasma Physics in Science and Technology"  
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**“Atmospheric pressure plasmas and microplasmas”  
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Outline:

1. Introduction to atmospheric pressure plasmas and microplasmas
  - 1.1 Incidences of atmospheric pressure plasmas
  - 1.2 Historical remarks
  - 1.3 Definition of microplasmas
2. Physics of plasmas and microplasmas at atmospheric pressure
  - 2.1 Electrical breakdown
  - 2.2 Similarity laws
  - 2.3 Classification of atmospheric pressure plasmas
3. Barrier discharges
  - 3.1 Discharge geometries
  - 3.2 Diagnostics of barrier discharges
  - 3.3 Filaments and barrier discharge microdischarges
  - 3.4 Diffuse barrier discharges
  - 3.5 Ozone synthesis
  - 3.6 Surface treatment
  - 3.7 Plasma displays, lasers and excimer lamps
  - 3.8 Exhaust treatment by means of barrier discharges
4. Corona discharges
  - 4.1 Discharge geometries
  - 4.2 Partial breakdown – streamer, leader, spark
  - 4.3 Exhaust treatment by means of coronas
5. Arc discharges at atmospheric pressure
  - 5.1 Properties of arc discharges at high pressures
  - 5.2 Material processing
  - 5.3 High intensity discharge lamps
6. Plasma torches and gliding arcs
  - 6.1 Gliding arc discharges
  - 6.2 Microwave excited plasma torches
  - 6.3 Applications of gliding arcs and torches
7. Plasma jets
  - 7.1 Configurations and diversity of plasma jets
  - 7.2 Selected applications of plasma jets
8. Selected examples of structured microplasma sources
  - 8.1 Micro-Hollow-Cathode discharges
  - 8.2 Plasma printing and plasma stamps
9. Electron beam generated plasmas
  - 9.1 Electron beam generation
  - 9.2 Exhaust treatment (large scale installations)
10. General summary