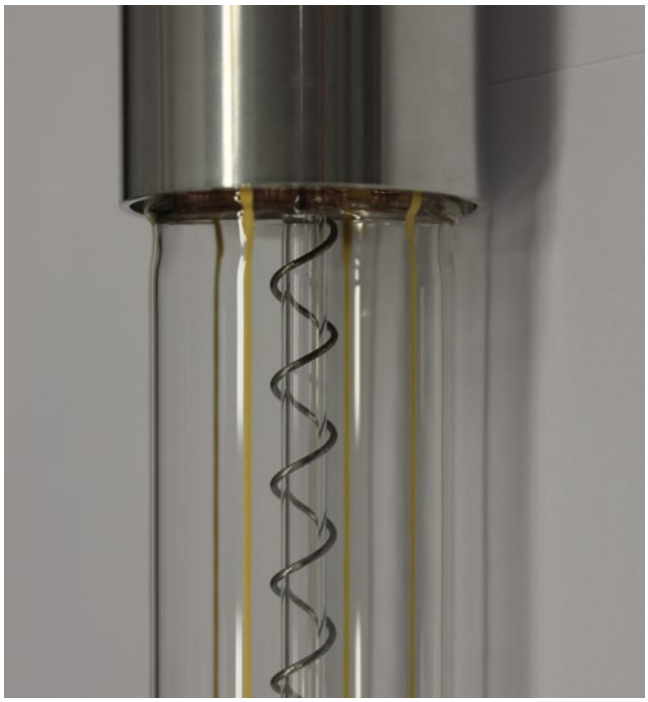
# Excimer Lamps

Typing a quick e-mail on the way to work or sending the latest holiday snaps straight home – smartphones and tablets make this so simple. Mobile devices are in continuous use and are subject to heavy strain. This is particularly true of the display, with the result that it needs to be highly resistant and durable.

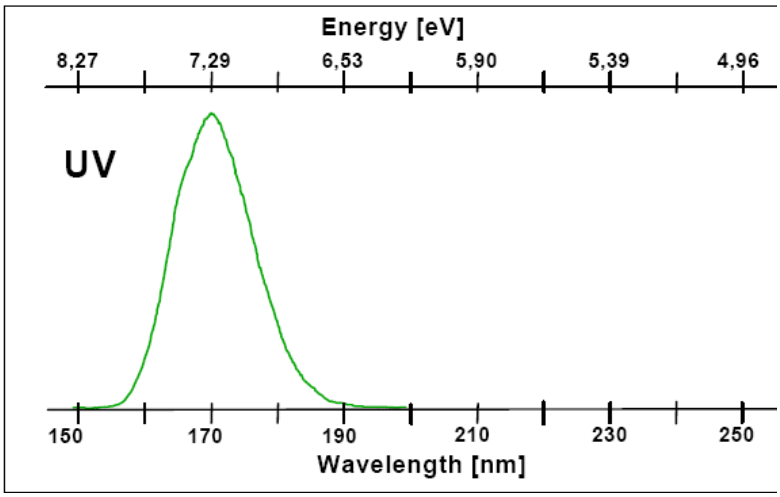
This is why during the production process, the display is cleaned several times with the aid of excimer lamps to remove from the substrates organic contamination which would reduce adhesion and quality. An excimer lamp is the name for a source of ultraviolet light, the high level of photon energy in which generates fractures in the bonds in the material; these react with their environment. This increases the surface energy and with this a consequently better adhesion and wettability can be achieved.

Irradiation with excimer lamps is also suitable for mattifying surfaces such as PVC flooring. At a wavelength of 172 nanometres, these lamps have immensely high-energy emission which starts a polymerization process in the top part of the layer of UV-curable coating. The penetration depth of UV radiation is comparatively low, with the result that this process leaves a micro-folded film on the wet coating without affecting layers deeper down.



These can then be cured using conventional UV technologies. Curing with excimer lamps results in extremely hard, matt surfaces with high resistance to scratches and mechanical abrasion. As these lamps are a cold light source, even heat-sensitive materials such as plastic and thin films can be treated. This aspect and the fact that no further chemicals are required for cleaning or activating surfaces also make excimer lamps very attractive from an environmental point of view and provides a constant UV lamp output.

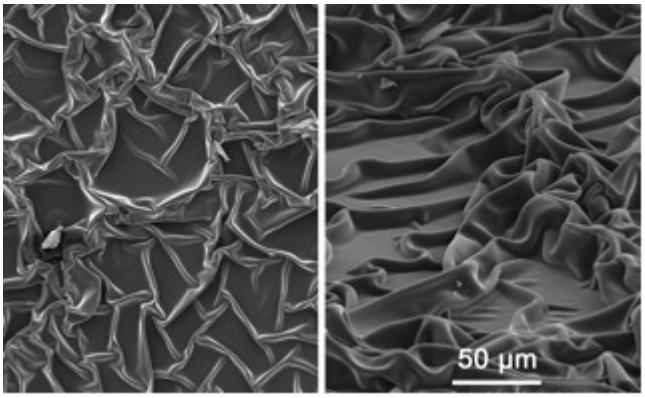
## Excimer Wavelength



## Excimer lamps are available for different applications:

### Matting of Coatings

- Precuring: UV-Excimer (172 nm) in inerted atmosphere
- Curing: UV-medium pressure lamp (full spectrum) in inerted atmosphere
- No matting agents needed.
- Gloss level: >5 GU




Source, DTNW

### UV cleaning for display production

- UV-Excimer (172 nm)
- Can produce ozone and excited oxygen
- Can break chemical bonds in the substrate (7,2 eV)
- increase of polar surface energy
- effective cleaning and activation of a wide variety of substrate surfaces.

**Contact angle.**
**Initial Value ⩽30°**

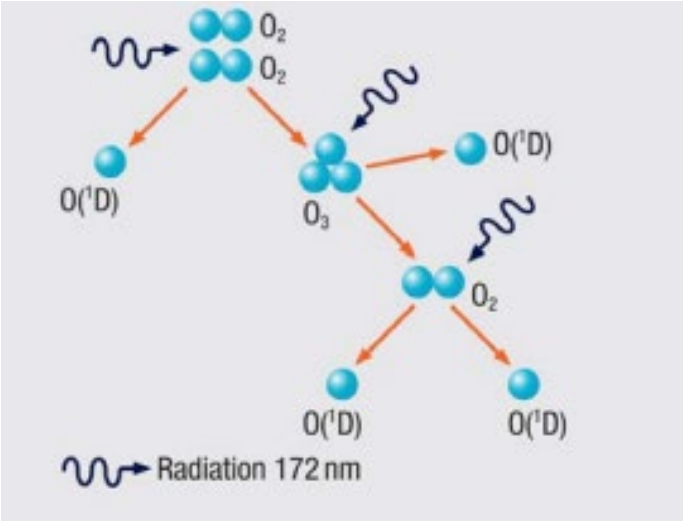
**Contact angle.**
**After Treatment Value ⩽10°**

### Excimer Lamps

- Lamp lenghts: 375 mm – 2300 mm
- Power: Approx. 5W/cm, max. 1 KW
- Efficiency: approx. 40%
- FWHM: approx. 14 nm
- Other wavelengths by changing the gas (222 or 308 nm)

Dielectric barrier discharge (DBD) reaction with quarz bulb as a dielectric barrier and the gas filling as discharge medium.

### Excimer Process



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