Exercise 4

To be discussed on 20.11.2018

1.)
Young’s equation is the basis for the quantitative description of wetting phenomena, which is expressed as following:

\[ \gamma_{LG} \times \cos \theta = \gamma_{SG} - \gamma_{SL} \]

For the ideal case of a circular drop on a homogenous flat rigid surface, derive Young’s equation.

2.)
Contact angle hysteresis can be caused by surface roughness, dissolved substances and structural changes of the solid at the three-phase contact line. Explain.

3.)
Explain the different steps of photolithography techniques. How do the adhesion promotion layers like Bis(trimethysilyl)amine (HMDS) work in the photolithography process? What is limiting the patterning sizes for the photolithography processes?