

# Mask update

SM, 10/12/2019

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- Prelim discussion with EP team (A. Mapelli) for the fabrication of a suitable mask for HNFS
- Possibility at CERN or at EPFL. Easiest option: Si substrate with nanometric holes
- Size of holes not clear yet, very much dependent on substrate thickness.
- Material...

# Refractive index at 12 keV

$$n(\lambda) = 1 - \delta - i\beta$$

Material	Delta	beta
SiO2	3.60E-06	1.98E-08
water	1.50E-06	1.97E-09
Si	3.17E-06	3.13E-08
Au	1.83E-05	2.46E-06
N	1.09E-06	1.10E-09
O	1.54E-06	2.53E-09

Source: [http://purple.ipmt-hpm.ac.ru/xcalc/xcalc\\_mysql/ref\\_index.php](http://purple.ipmt-hpm.ac.ru/xcalc/xcalc_mysql/ref_index.php)

# Thickness vs Delta n

- Phase retardation:  $k * \Delta n * d$ 
  - 10 um of Si:  $2\pi/0.1 * 10^{-9} * 1.67E-06 * 10^{-5} = 1.04$