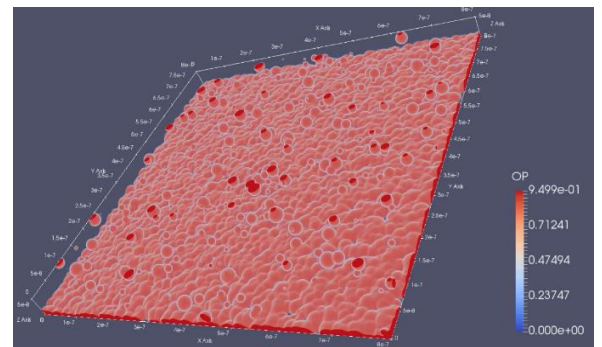
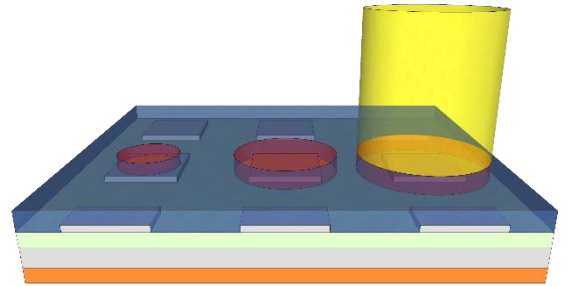


Open Master and Bachelor Thesis Projects

Title: Multiphysics Simulations of Phase Change Material Based Meta-surfaces

Meta-surfaces are artificially created quasi 2D subwavelength structures with unusual electromagnetic properties that are rare or absent in nature. In the last years, a lot of attention has been drawn to so-called active meta-surfaces which promise a significantly increased flexibility and control over the material properties post-production through the introduction of switchable, tunable and/or nonlinear functionalities. One promising material group for these active components are Phase Change Materials. They can be reversibly switched between different phases on nanosecond timescale. Being able to simulate those meta-surfaces accurately, especially during the complex tuning process, requires a 'self-consistent' coupling of different simulations including electromagnetic, thermal and phase kinetics simulations. These simulations are of essence to efficiently create and optimize designs, show new possibilities and in general improve the understanding on the subject.



Tasks:

- Apply the existing simulation method to different meta-surfaces
- Study the influence of surface effects on the crystallization
- Design and optimize meta-surface structure accordingly
- Implement new functionalities for the multiphysics simulation

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