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## Minisymposium 8 - Homogenisierung und Anwendungen

### Multi-scale simulation of diffusion and absorption in chloroplasts

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We construct a microscopic model for diffusion of proteins in the interior of chloroplasts which can be considered as a complex heterogeneous medium. Under the assumption of periodic heterogeneities, we derive a homogenised model for this process and prove estimates of the approximation error. We then verify the validity of the model numerically, and see that it is a good approximation even for non-periodic settings. Finally, we discuss the possibility of using the approximation for the construction of multiscale preconditioners.