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## The application of chemo-mechanical coupling in the modeling of exsolution lamellae in minerals

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The recent careful theoretical, numerical and experimental investigations of exsolution microstructures focus only on chemical aspect of the exsolution process. Interestingly, mechanics, i.e. stress and pressure redistribution around the exsolved lamellae, may play an important role on its evolution. In this contribution, we investigate the coupled, chemo-mechanical, effect around the exsolved lamellae. We apply a classical Cahn-Hilliard-type equation and we add more complexity considering deformation during the exsolution process. We also discuss the general importance of the exsolution process in geomaterials and its effect on rheology. At the time of the exsolution lamellae formation (coherent at initial stage), large stresses are built-up inside the host grain. The reason that we still partially see the microstructure preserved is that the stress variations were maintained during the further evolution. In other words, a strong rheology is needed to preserve such large stresses on geological timescales so that we can now detect by the analytical techniques.