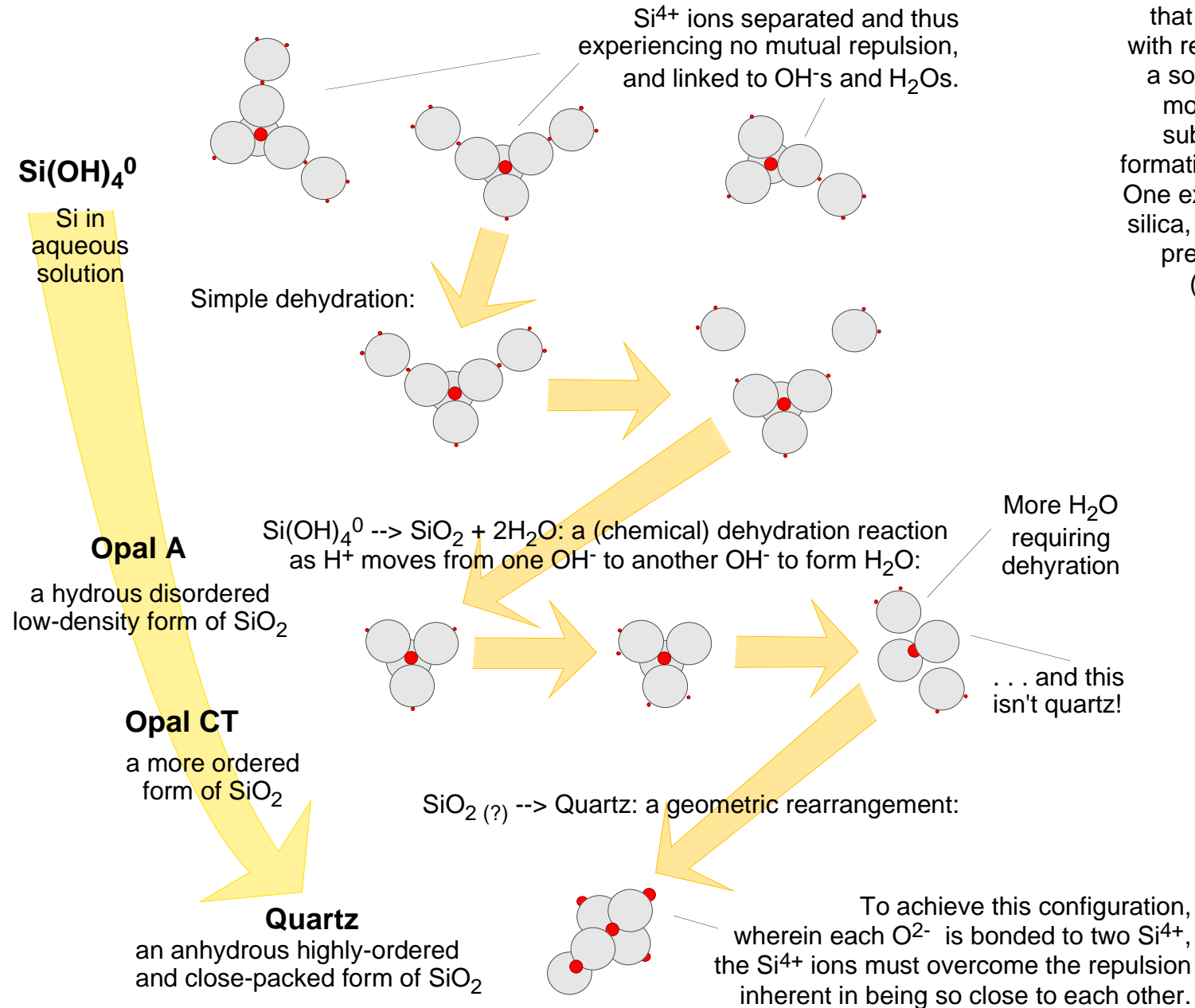


## An illustrative example of Ostwald's Law: Silica



Ostwald's Law, or Ostwald's Step Rule, is the generalization that a solution supersaturated with respect to multiple forms of a solid will first precipitate the most soluble form, which will subsequently undergo transformations to less soluble forms. One excellent example is that of silica, which in low-T systems is precipitated as opaline silica (both abiogenically and by organisms) and only later (typically after millions of years) becomes the finely crystalline quartz of chert.

It's a good example because so much must happen to transform dissolved silica to quartz: multiple steps of dehydration and (then) rearrangement of high-ionic-potential  $\text{Si}^{4+}$  cations into a configuration defying their mutual repulsion. The result is hydrous and less ordered opaline steps along the way to quartz, and hence a "step rule".