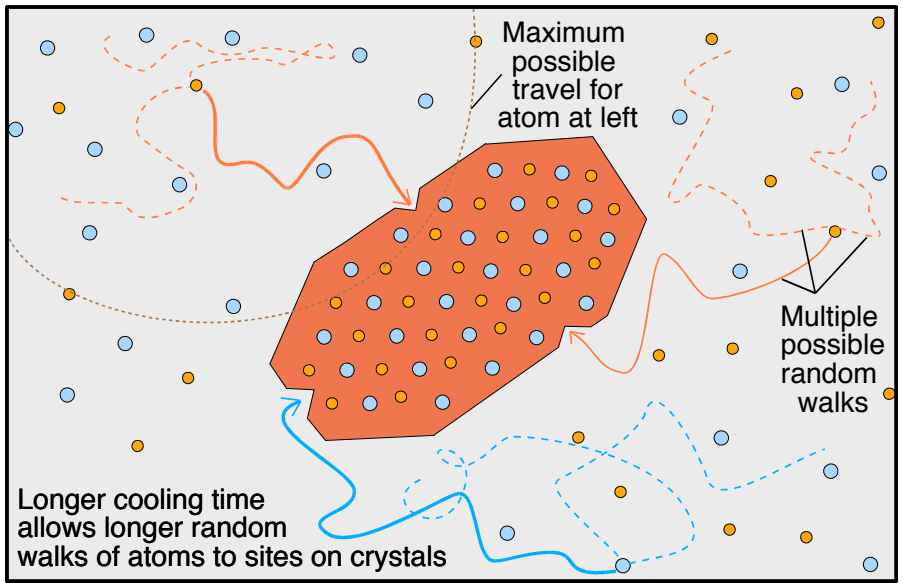
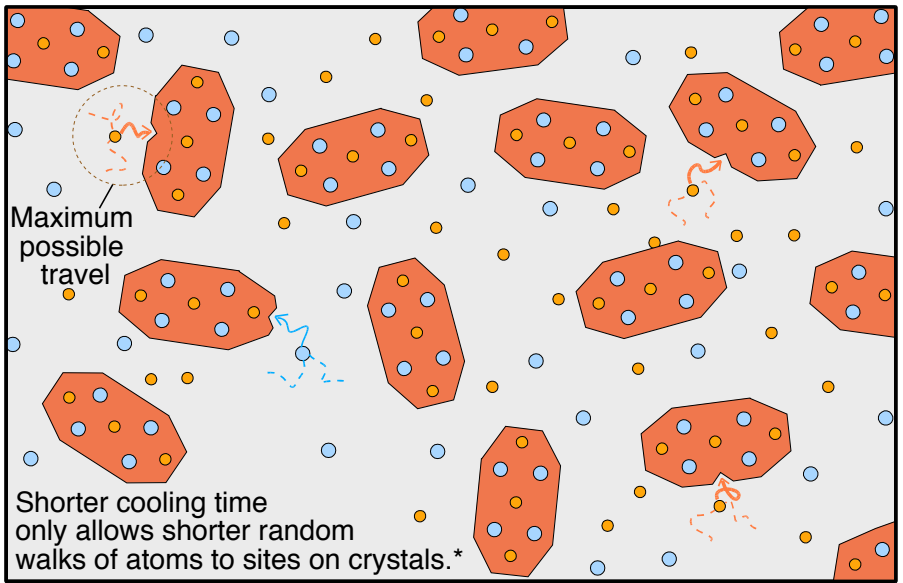
Rate of cooling of magmas and the texture of igneous rocks

Slow cooling:



Fast cooling:



Another way to look at this is the much greater surface area of smaller crystals provides more surface area and thus more sites for atoms to join in a shorter time.*

Size of crystals:	coarse-grained	fine-grained
Descriptive terms on the basis of whether crystals are visible to naked eye:	phaneritic From the Greek word ϕ $\alpha\nu\varepsilon\rho\acute{o}\varsigma$ for "visible"	aphanitic (at least *most* of the crystals are tiny and invisible; some early-forming crystals may be large, giving a porphyritic rock)
Genetic terms on the basis of whether the rock forms inside the Earth or at its surface:	intrusive	extrusive
Genetic terms derived from the names of Roman gods:	plutonic From Pluto, the god of the underworld	volcanic From Vulcan, the god of the forge

*The explanations above assume that many small crystals will exist with fast cooling. Nucleation of many small crystals happens as fast cooling induces a high saturation state that allows crystal nuclei to grow despite their large ratio of surface area to volume, which otherwise thermodynamically disfavors their survival .