

## morphology coarsening

**Also contains definition of:** phase ripening

Process by which phase domains increase in size during the aging of a multiphase material.

Notes:

1. In the coarsening at the late stage of phase separation, volumes and compositions of phase domains are conserved.
2. Representative mechanisms for coarsening at the late stage of phase separation are: (1) material flow in domains driven by interfacial tension (observed in a co-continuous morphology), (2) the growth of domain size by evaporation from smaller droplets and condensation into larger droplets, and (3) coalescence (fusion) of more than two droplets. The mechanisms are usually called (1) Siggia s mechanism, (2) Ostwald ripening (or the Lifshitz–Slyozov mechanism), and (3) coalescence.
3. Morphology coarsening can be substantially stopped by, for example, vitrification, crosslinking, and **pinning**, the slowing down of molecular diffusion across domain interfaces.

**Source:**

PAC, 2004, 76, 1985 (*Definition of terms related to polymer blends, composites, and multiphase polymeric materials (IUPAC Recommendations 2004)*) on page 2000