Fundamentals of nanotechnology

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Mechanical Properties of Nanostructured materials

The nano scale size of the nanomaterials tends to modify many of the mechanical properties of nanostructured materials from the bulk materials. An enhancement of mechanical properties of nanomaterials generally results from structural perfection of the materials. Particles size reduction to nano-meter scale poses new technological

Mechanical Properties of Nanostructured materials

challenges such as particle agglomeration and de-bonding from matrix. The role of atomic - scale forces of Van der Waals attraction and electrostatic repulsion must also be taken into account to fully understand the mechanics of particles interaction. Improvements in mechanical property have resulted in major interest in nanocomposite in various automotive and general industrial applications.

Mechanical Properties of Nanostructured materials

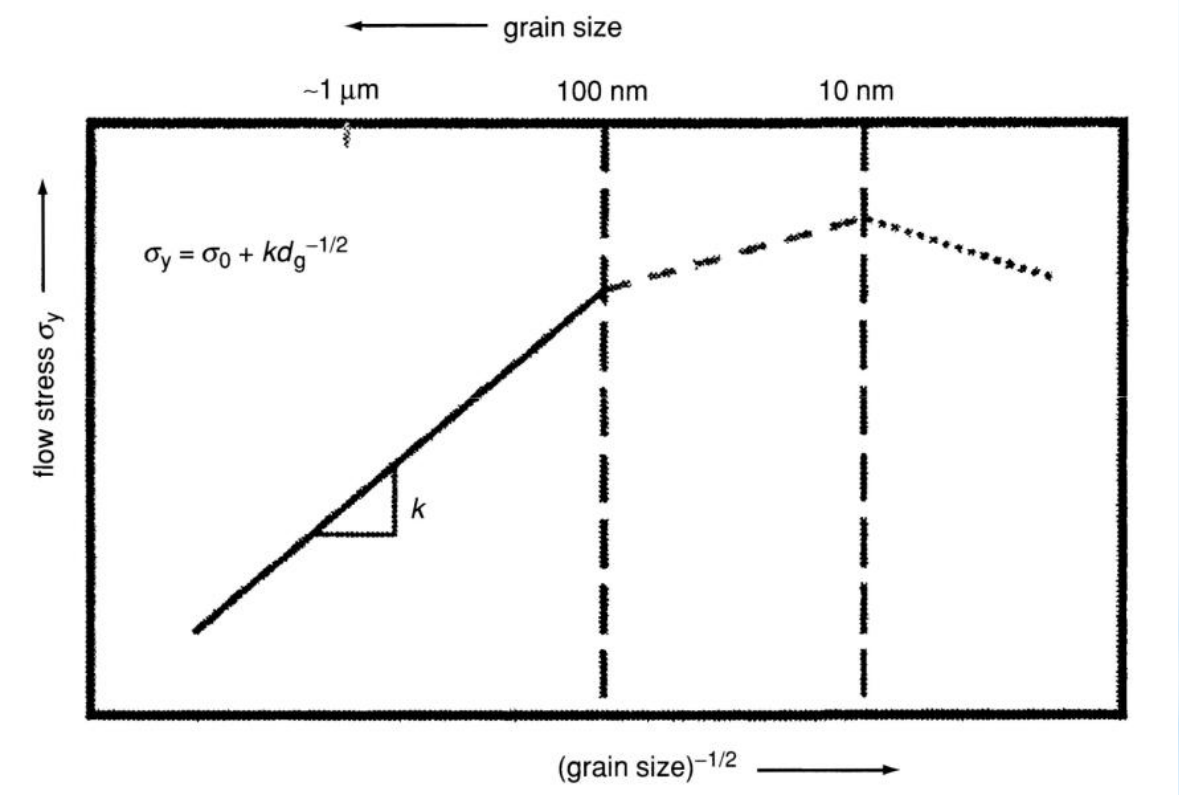

Figure 1 Schematic diagram of the variation of yield strength as a function of grain size

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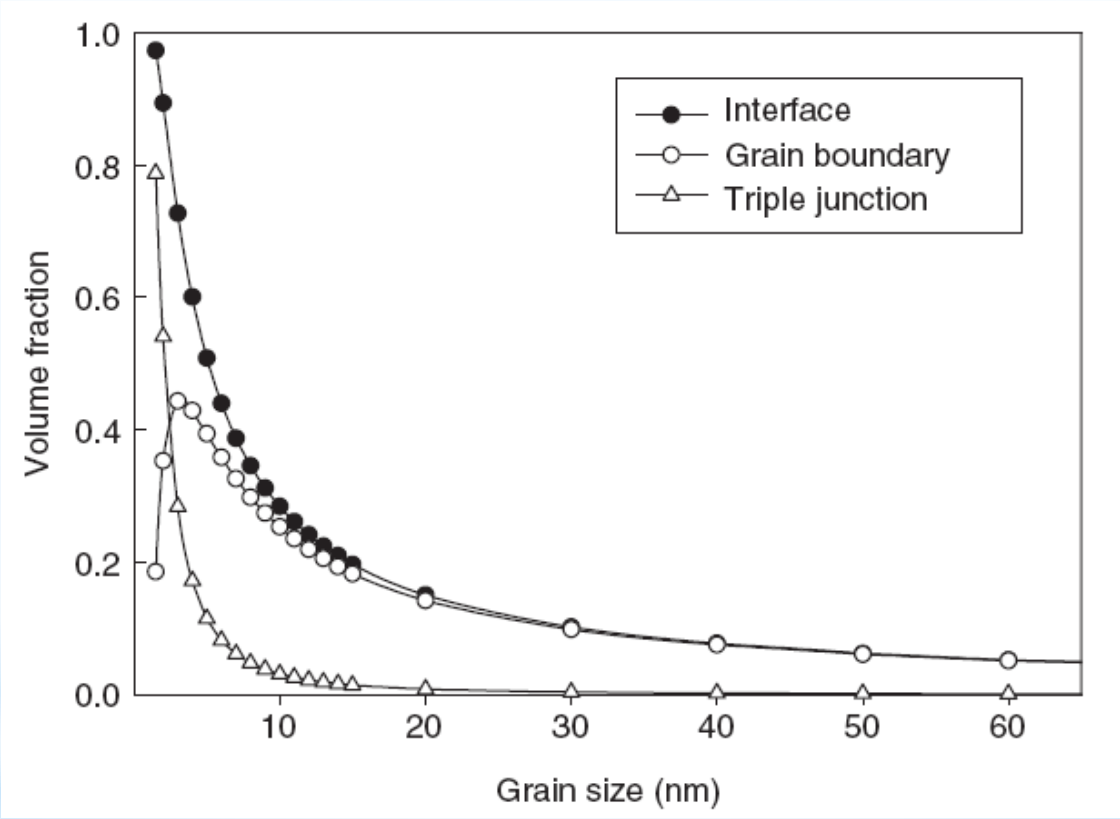

Figure 2 Volume fractions of the total interface component, grain boundaries and triple junctions, as a function of grain size, assuming a grain boundary width of 1nm