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浆料系统内上升气泡周围微细颗粒浓度分布和附着效率的理论研究

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摘要　Quantitative prediction of distribution function and adhesion efficiency of particles around a risingbubble in slurry systems is presented in this work. By solving the convection-diffusion equation (Fokker-Planckequation), the influence of Brownian diffusivity of fine particles on concentration distribution and adhesion efficiencyis demonstrated with the hydrodynamic force and van der Waals attractive potential between particles and bubbleconsidered. It is found that two kinds of mechanism dominate the adhesion process of particles on bubble accordingaddition, the viscosity ratio of bubble to the suspending fluid was found to have obvious influence on particleadhesion.

关键词　<u>adhesion efficiency</u>　<u>Brownian diffusivity</u>　<u>distribution function</u>　<u>Fokker-Planck equation</u>
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Theoretical Approach to Concentration Distribution and Adhesion Efficiency of Fine Particles Around a Rising Bubble in Slurry Systems

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Abstract Quantitative prediction of distribution function and adhesion efficiency of particles around a risingbubble in slurry systems is presented in this work. By solving the convection-diffusion equation (Fokker-Planckequation), the influence of Brownian diffusivity of fine particles on concentration distribution and adhesion efficiencyis demonstrated with the hydrodynamic force and van der Waals attractive potential between particles and bubbleconsidered. It is found that two kinds of mechanism dominate the adhesion process of particles on bubble accordingaddition, the viscosity ratio of bubble to the suspending fluid was found to have obvious influence on particleadhesion.

Key words   <u>adhesion efficiency; Brownian diffusivity; distribution function; Fokker-Planck equation</u>

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