

Rheology Fundamentals for Slurries and Pastes Short Course

7 April 2025 | Swakopmund, Namibia

Collaborating
Organisation



WORKSHOP PROGRAM – 7 APRIL 2025*

07:45–08:20	REGISTRATION
08:20–08:30	Welcome and introduction <i>Dr Fiona Sofrà, Rheological Consulting Services Pty Ltd</i>
08:30–10:15	<p>What is a slurry? The liquid-to-solid continuum <i>Dr Fiona Sofrà</i></p> <ul style="list-style-type: none"> • How do we define a slurry/paste? • Solids concentration/density • Particle size distribution (PSD) • Particle morphology • Mineralogy/surface chemistry <p>Slurry rheology/flow properties <i>Dr Fiona Sofrà</i></p> <ul style="list-style-type: none"> • Explanation of the following flow properties and an overview of what they mean in the 'real' world <ul style="list-style-type: none"> • Yield stress • Viscosity • Shear rate dependence • Time dependence • The effect of solids concentration, PSD, morphology on the flow characteristics of slurries – examples
10:15–10:45	MORNING BREAK
10:45–12:00	<p>Slurry rheology measurement <i>Dr Fiona Sofrà</i></p> <ul style="list-style-type: none"> • Yield stress measurement <ul style="list-style-type: none"> • The vane method • The slump tests • Extrapolation • Online rheometer • Shear stress – shear rate (flow curve and viscosity) measurement <ul style="list-style-type: none"> • Rotational methods including the 'bucket' rheometer • Capillary/pipe loop testing • Laboratory versus pipe loop/online testing • Data extrapolation • Reading rheograms <p>Flow models – communicating data <i>Dr Fiona Sofrà</i></p> <ul style="list-style-type: none"> • Types of flow models • How to use flow models • Slurry rheology measurement problems and pitfalls – examples and case studies <p>Slurry rheology roadmap <i>Dr Fiona Sofrà</i></p> <ul style="list-style-type: none"> • A systematic 'decision tree' approach for rheology studies for slurry system design and optimisation <p>Slurry surface chemistry/rheology and dewatering relationships <i>Professor Peter Scales, Rheological Consulting Services Pty Ltd</i></p> <ul style="list-style-type: none"> • Clay chemistry, zeta potential and ionic strength explained • The clays that cause rheology and dewatering issues • Additives (including flocculants) and suspension rheology and dewatering

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12:00–13:00	LUNCH
13:00–14:30	<p>Dewatering <i>Professor Peter Scales</i></p> <ul style="list-style-type: none"> • Characterisation of the dewatering of suspensions • Compressibility, permeability, settling, clarification and the role of flocculants • Saturated and desaturated suspensions <p>Thickening <i>Professor Peter Scales</i></p> <ul style="list-style-type: none"> • Thickener types and selection criteria • Relationship of compressional and shear rheology in a thickener • Control of the thickener for optimal rheology
14:30–15:00	AFTERNOON BREAK
15:00–16:40	<p>Filtration <i>Dr Ross de Kretser, Acclarium Tailings and Solid-Liquid Separations Consulting</i></p> <ul style="list-style-type: none"> • Filter types, selection criteria with specific relevance to tailings <p>Filtration and geotechnical considerations <i>Dr Ross de Kretser</i></p> <ul style="list-style-type: none"> • Cake handling and geotechnical considerations in system design and optimisation • Geotechnical parameters, dewatering and shear rheology relationships Yield stress • Application of an integrated understanding of rheology, dewatering and cake behaviour to pressurefiltration system design and control
16:40–17:00	Question and answer session
17:00	WORKSHOP CLOSE AND DRINKS AND NIBBLES

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