

6. RECOMMENDATIONS FOR FUTURE RESEARCH

As mentioned in the previous chapters, this research work considers a numerical simulation combining coupled stress-flow processes with particle transport, and a simplified approach has been developed. Further research is recommended regarding the following subjects:

- Evaluation of the dispersion of the particle transport, as it was done by Neretnieks *et al.* (1982) with experimental breakthrough curves and a numerical simulation.
- Consideration of transport mechanisms, such as matrix diffusion, sorption and physico-chemical reactions, in the particle tracking code.
- Performance of a direct shear experiment with normal load to measure the aperture values of a rough fracture during translational shear considering normal loading. Thus, the flow rate would be more realistically measured with stress effect.
- Consideration of the effects of the asperity damage and gauge formation on fluid flow and particle transport.