Particle generation for geometallurgical process modeling

From textures to particles

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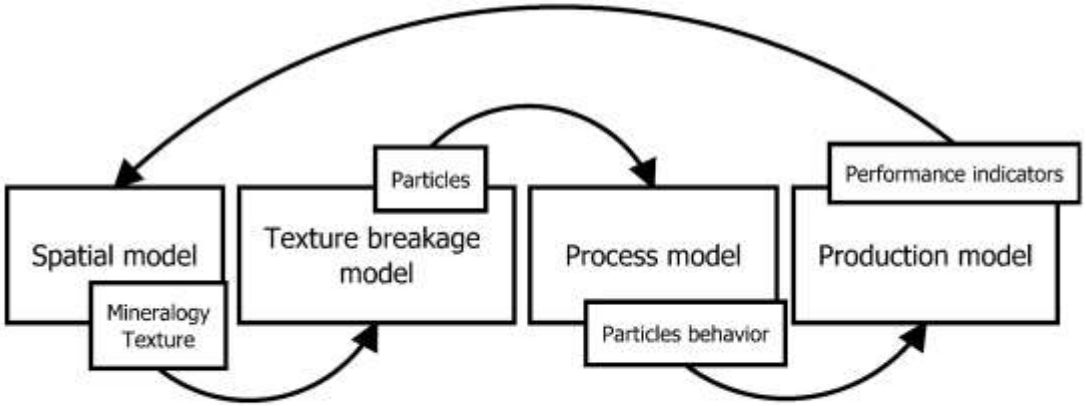
Introduction

Geometallurgy

- Geology
- Process mineralogy
- Metallurgy

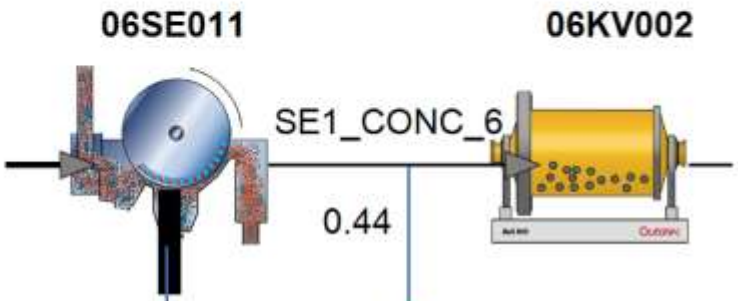
Turn this information into a **predictive model**



Scope of this work

Generate the right particles to use in the process model before the block is even mined

Levels of detail



Streams

- Liquid
- Gas
- Solids

Particles

- Geometry
- Mass
- Texture

Minerals

- Composition
- Structure

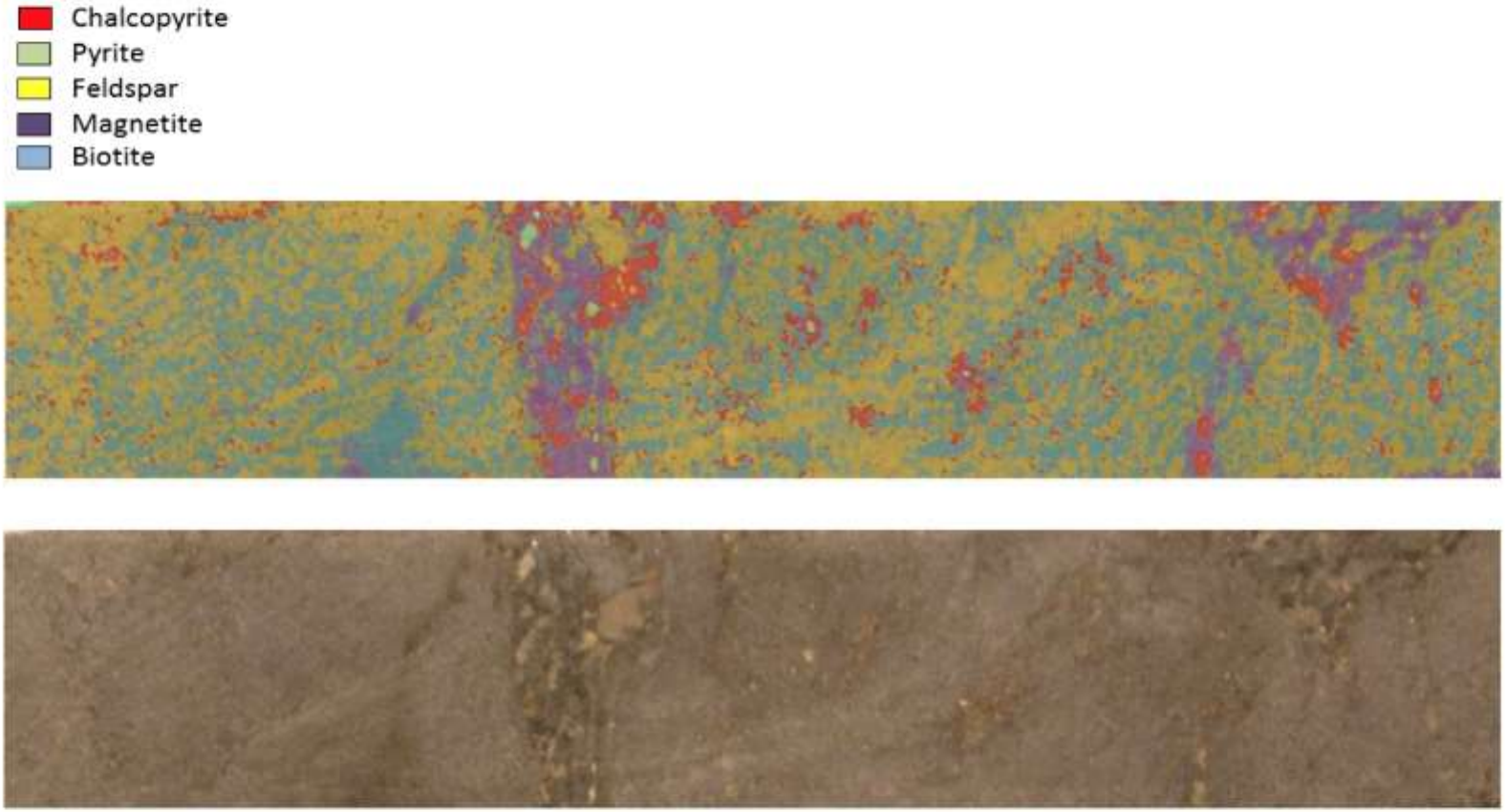
Elements

- Mass
- Charge

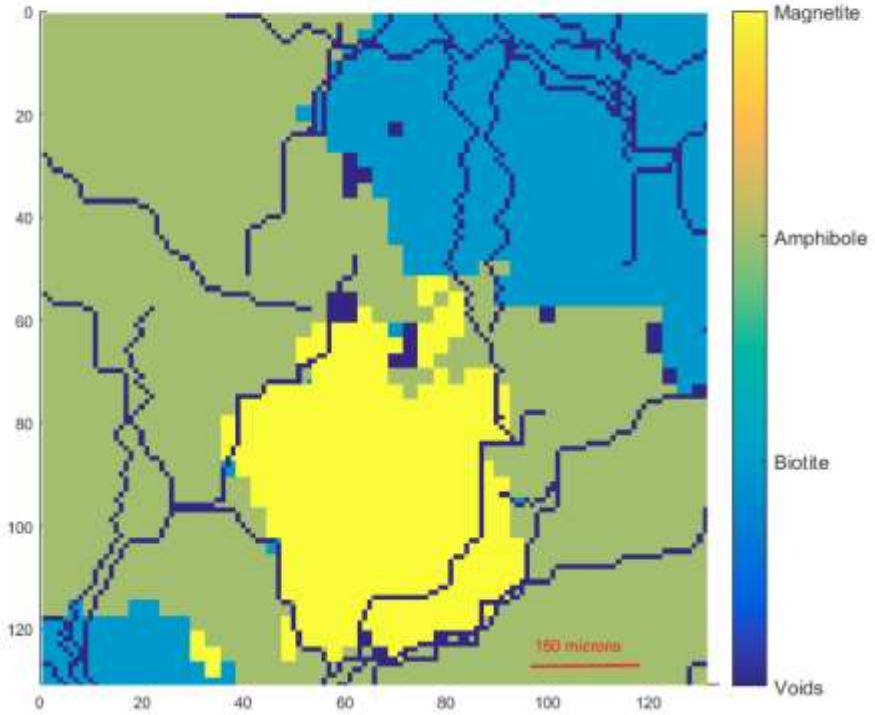
Units models

- Operational parameters
- Physics
- Chemistry

Step 1 and 2 : Analyse and classify different textures



Step 3 : Break textures into particles



1. Analyse rock texture
2. Classify different textures
3. Break the texture into particles
4. Use particles in a flowsheet simulation
5. Generate predictions and validate them

Conclusions and perspectives

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Conclusions

- Predictive models are useful for geometallurgy
- Rock textures can be quantified at different scales
- By measuring textures and simulate breakage, one can generate particles for flowsheet simulation at liberation level

Perspectives

- Digitalization ? Creating value based on digital technologies
- Machine learning ? Using statistics on computers to solve complex tasks
- Developing tools to quantify the value created by numerical models

Questions ?

Thank you for your attention !

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