**Surface Textures**

- Record the history of the grains
- Transport conditions
- Juvenile characteristics
- Hydrovolcanic attributes

**Transport conditions**

- Abrasion
- Microcracks

**Abrasion**

**Microcracks**

**Juvenile Features**

- Fresh glass
- Angular or rounded bubbles
- Pumice
- Smooth fusiform surface
- Glass spheres
**Pumice**

- Blocky glass fragments
- Cauliflower surface texture
- Altered surfaces
  - Pitting
  - Hydration cracks
  - Coatings
  - Secondary minerals

**Glass Spheres**

**Hydrovolcanism**

- Blocky glass fragments
- Cauliflower surface texture
- Altered surfaces
  - Pitting
  - Hydration cracks
  - Coatings
  - Secondary minerals

**Hydrovolcanic Clast**

**Cauliflower Clast**
Gypsum on Crystal

Gypsum Coating