A close-up of small rocks

Description automatically generatedSample: 2(89)

**Grain** **2:**

*Grain colour/transparency:*

* Black/Opaque

*Grain shape/texture:*

* Sub-rounded
* Sub-spherical
* Mostly pitted surface. Some polished edges. Sharp fractures.

*Modal abundance and grain size (estimated):*

* ~30%, 0.3mm

*Mineral/rock identification:*

* Basalt (rock)

*Other features:*

* Pitted surface shows signs of weathering to buff coloured mineral (unknown mineralogy)

Mineral 3:

*PPL:*

6 sided, sub-hexagonal and

6 sided, lozenge shaped

Euhedral grain boundaries

Pale green/grey

Strong cleavage

Irregular fractures

Low relief

*XPL:*

Inclined extinction to long grain edge

Low grey to yellow birefringence colours

No twinning

*Mineral ID:*

Orthopyroxene

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Description automatically generated

Images courtesy of Jordan Poole

The University of Liverpool

**Source:**

Kilauea, Hawaii

Beach sand derived from local volcanic rocks.

Formal grain sample name:

Well-sorted, mineralogically mature and texturally moderately mature sand.

**Summary:**

*Sediment maturity:*

* Texturally moderately mature: the grains are generally rounded and sub-spherical with some polished edges. Mineralogically mature: primarily only two grain types – olivine and basalt.

*Provenance:*

* Moderately proximal to the source: olivine grains are euhedral, but basalt grains rounded.

*Transport history:*

* Non-abraded surfaces demonstrate likely fluvial transport. Most grains similar size 0.5mm: transport via consistent flow velocity.

**Grain 3:**

*Grain colour/transparency:*

* Brown with green stripe/translucent

*Grain shape/texture:*

* Rounded
* Spherical
* Polished

*Modal abundance and grain size (estimated):*

* <1%, 0.3mm

*Mineral/rock identification:*

* Intergrown olivine of different composition*s*

*Other features:*

* Pitted surface shows signs of weathering to buff coloured mineral (unknown mineralogy)

**Grain 1:**

*Grain colour/transparency:*

* Green/Transparent

*Grain shape/texture:*

* Sub-rounded
* Sub-spherical
* Smooth, conchoidal fractures, polished

*Modal abundance and grain size (estimated):*

* ~70%, 0.7mm

*Mineral/rock identification:*

* Olivine (mineral)

*Other features:*

* Grains demonstrate euhedral crystal shape of olivine
* Some olivine grains have small black inclusions of basalt

**1mm**

**1mm**