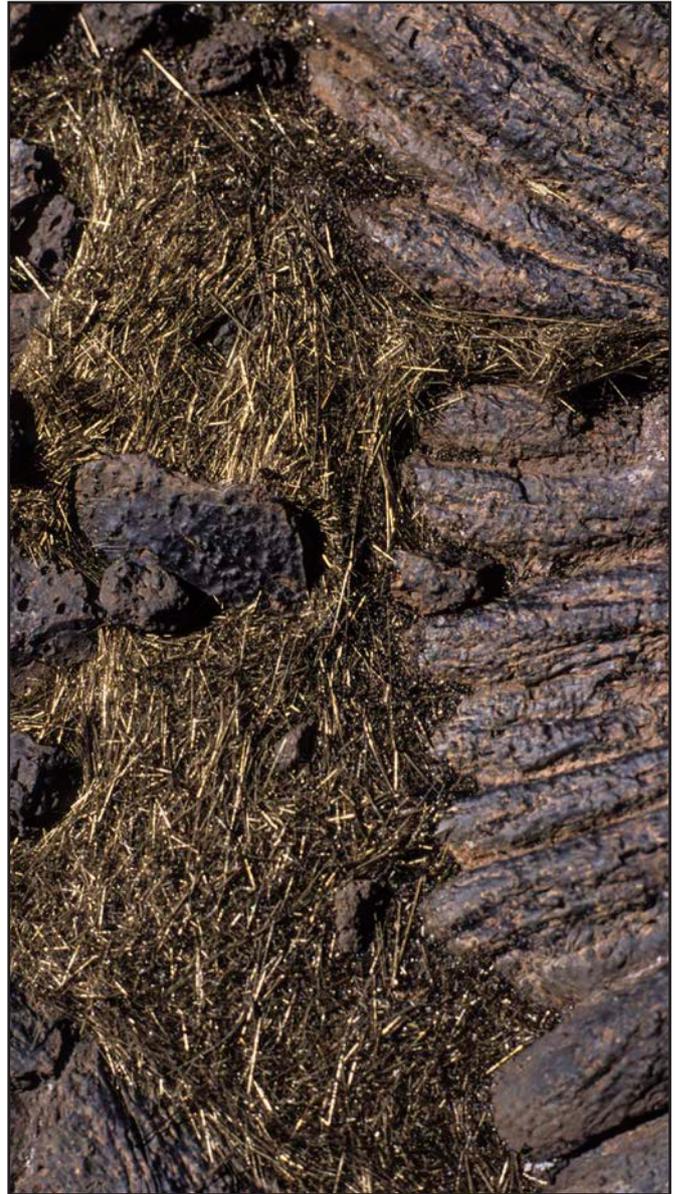


Pele's Hair and Reticulite

On the Big Island of Hawaii, Kilauea is generally rated as the most active volcano on Earth. Its individual vents vary in their status, but notable of recent was Pu'u O'o which produced basaltic lava continuously between 1983 and 2018. Its various fountaining phases were remarkable for their production of large amounts of Pele's Hair. These delicate strands of basaltic glass are drawn out by the wind from airborne droplets of very liquid lava ejected during a mildly explosive fountaining eruption.

A walk across the Kau Desert, on the southern slopes of Kilauea, revealed, in 1989, huge amounts of Pele's Hair, which had survived in the desert conditions, probably from phases of the fountaining events during 1986. Most of this could be described as fine needles better than as hair, but the golden lustre made the piles of needles caught in the grooves of ropey lava truly impressive.

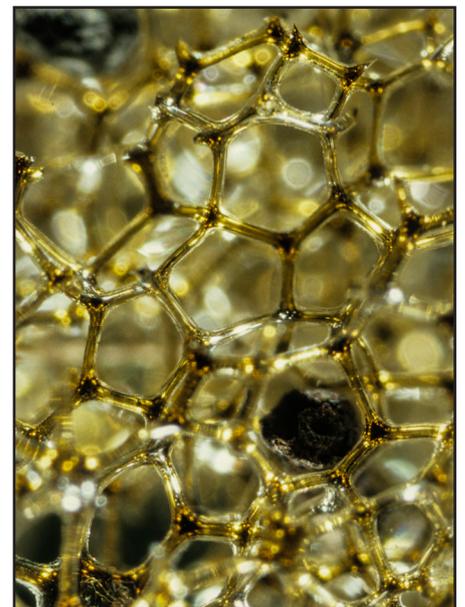
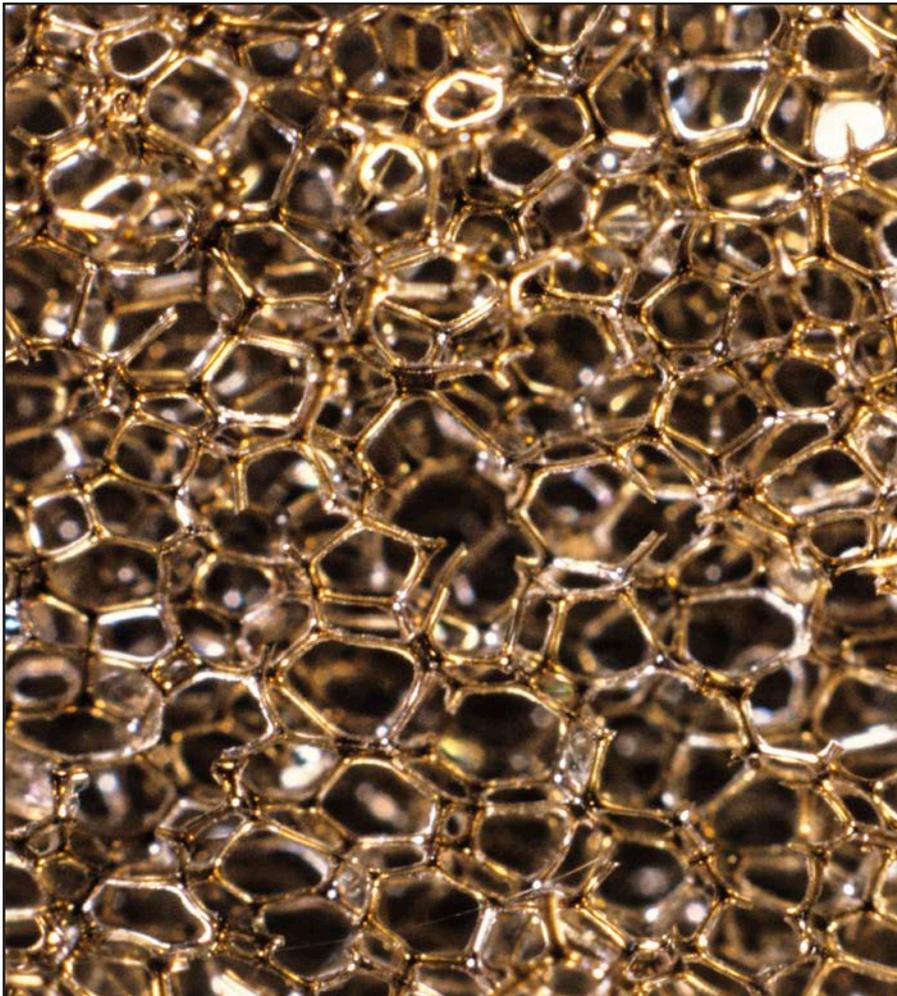
In the following year, 1990, a group on a field trip to Hawaii stopped on the Chain of Craters Road where it crosses spectacular lavas with adjacent pahoehoe and aa flows both then less than 18 years old. Close inspection of the ground revealed yet again unusual quantities of Pele's Hair, probably from the same 1986 eruption. Much of this was in its typically very fine form that is truly hair-like, and some strands were half a metre long.



ABOVE: Golden needles and fibres of Pele's Hair on the young pahoehoe lava in the Kau Desert.

ABOVE LEFT: The well-known site with fresh pahoehoe and aa lavas that was also the prime reticulite locality beside the Chain of Craters Road.

LEFT: Pele's Hair, including some with droplets of black glass drawn out into golden fibres, and the scale given by the type-written label.



Phil Small's micro-photographs of the Kilauea reticulite. The near-translucent rods of basaltic glass form a lattice left at the triple boundaries of gas bubbles, each of which was, about 1 mm across.

LEFT: One of the little chunks of reticulite found in 1980 on the flanks of the Kilauea volcano; this piece is just 50 mm long.

Then along with the Pele's Hair, some of the group found fragments of reticulite. This is a foam of volcanic glass that solidified in mid-air before its contained gases had escaped. And within the brief interlude of solidification, most of the very thin walls between the vesicles had collapsed, leaving only filaments of glass along the triple junctions between bubbles. The end result is a rigid 3-D lattice of glass fibres with a bulk porosity of about 98%, giving it the lowest density of any rock. It is extremely fragile, is easily crushed in the fingers, and would not survive intact for long on the windswept slopes of Kilauea.

A few small samples were collected and preserved in the usual film canisters. Then back home in Nottingham, using microscopes in his hospital laboratory, one piece of reticulite was photographed, at great magnification and with great difficulty, by Phil Small, who is sadly no longer with us. Phil's splendid photographs have a certain rarity value, and show an extreme example of what nature can produce with basaltic glass.

Tony Waltham (www.geophotos.co.uk)

A shorter version of this report appeared in *Mercian Geologist*, v.19, pp.74–75, 2017.