

## **Quartz Grains – A Journey into the Past**

**Imagine a warm sunny day, walking on the beach. Feeling the pleasant round sand grains underneath your feet and their brightness being a reflection of the sun above. Imagine clasping a handful of these grains and having a closer look. What do you see? Just, regular grains of sand? In fact...you are partially right if you think so. What we do not see with the naked eye is perhaps the more important question. It is the countless of tiny microscopically sized marks, named “*microtextures*”, which we have quite recently discovered. Textures left as scars and imprinted on the grains – each offering a direct ticket to the past; to the history and changing of their surrounding environment.**

The study of sand grains and their small scale qualities have not long been under research. Scientist have been trying to describe the many different and fascinating marks since the early 20<sup>th</sup> century. Realising that these features can be directly connected to the grain’s original environment. Studies have been done on many kinds of grains, made up from all kinds of elements described as minerals. One mineral, quite hard and resistant to breakage and widely investigated in this study – is *quartz*. Quartz is the mineral building up most of the sand grains found on the beach and especially grains moved and sorted by the wind. Quartz grains are able to record a large number of marks, making them ideal for bringing the past environment back to life. In this study, the wind affected quartz grains, are investigated in particular. The main goal is to identify as many marks present on the grains and then, just as a detective, correlate them to processes and the environment which would have formed them.

With the help of modern microscopes, the surfaces of the grains can be observed in greater detail – connecting their surfaces with events from the past. As fascinating as the shapes and forms the textures seen are, they are present in many different environments. This however can be quite a problem for beginners, to explain the origin of grains by textures that can be present in more than one environment.

In this study, quartz grains were been collected from two windborne environments in Sweden: Brattforsheden and Vittskövle and the occurrence of different marks have been investigated. This is to give a broader picture of which marks are more common than the others. The marks on the grains have shown to be the results of a costal environment at Vittskövle and a more glacially influenced environment at Brattforsheden. To some extent, the grains from both locations have later been affected by the wind. The results given show that different combinations of ca. 30 textures can offer a somewhat representative picture of each grain’s exciting journey to the present.

