

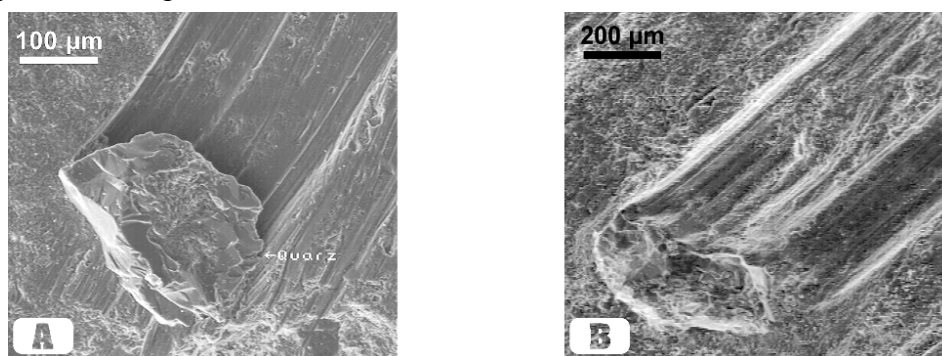
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## A new impact structure in NE Spain? - Evidence from striated rock surfaces

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New occurrences of striated pebbles have been recently discovered in NE Spain (SACHS & PFLUG 2002; SACHS 2002 in prep.). Usually these pebbles have been considered to be a typical feature of ejecta from impact craters (CHAO 1977; POPE et al. 1999). To decide whether these scratch marks are produced during an impact event, striated rock surfaces of similar rocks from the well documented "Nördlinger Ries" impact crater (CHAO 1976) have been compared with the pebbles from Spain. The investigated pebbles from the Nördlinger Ries impact structure and the pebbles from the salt diapir near Peñacerrada in NE Spain are Jurassic and Cretaceous limestones, respectively. The striae producing minerals are in both cases mainly quartz fragments as shown by semiquantitative EDX analyses. The surfaces of the pebbles were studied under the scanning electron microscope. The striae of both pebble suites show many similarities (Figure 1a, b), but also some significant differences. On the sample surfaces from the Nördlinger Ries, for example, occur strongly curved striae whereas pressure solution phenomena at the contact scratching grain/pebble are restricted to the samples from Spain. These findings suggest that it is possible to distinguish striated pebbles formed by different processes. The striated pebbles of the salt diapir in Spain can easily be formed by plastic deformation within a clay-mineral matrix under relatively high confining pressure in the centre of an overthrust anticline. Therefore striated pebbles do not necessarily indicate impact structures.



**Figure 1.** Quartz fragment on the surface of a limestone pebble at the end of a similar scratch mark from (A) Nördlinger Ries and (B) NE Spain.

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