

## The world's oldest crustoid graptolites from the upper Tremadocian of Poland

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The Crustoidea are an order of sessile basic graptolites that are morphologically intermediate between the extant genus *Rhabdopleura* (Rhabdopleuroidea) and the extinct sessile order—the Dendroidea (Kozłowski 1962, 1966; Bulman 1970; Urbanek 1986). So far these rather poorly known graptolites of significant phylogenetic importance have been reported from the upper Arenigian or lower Llanvirnian (Kozłowski 1962) to the upper Ludlow (Mierzejewski 1977). Isolated fragments of the graptolite stolon system were chemically extracted from upper Tremadocian chert nodules from Wysoczki (Holy Cross Mountains, central Poland) and examined with SEM. Because of the characteristic trifurcation and fine annulation of the stolons they are recognized as remnants of the crustoid graptolites. This discovery extends the stratigraphic distribution of the crustoid graptolites and explains the enigmatic presence of graptoblasts in the upper Tremadocian beds of Wysoczki.

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