

## **The Gilding of the Earth** by *Harriet Jarlett, Geoscientist, November, 2011, p.7*

It is well known that Archaean terrains of the different continents throughout the world are repositories to major deposits of gold and other metals. The reasons for such endowment have been debated extensively. Being a siderophile element, much of the gold and related precious metals segregated to the core by 4.5 Ga through both the earlier event of core formation and the subsequent moon-forming impact, leaving a mantle with depleted characters, as found

out from the 4.0 Ga old Isua rocks of Greenland by Wildbold and others (Nature, 2011) based on tungsten isotope studies ( $\bullet W = 0.15$ ). It has been surmised that the gold and precious metals segregated in the core can *'pave the entire surface of the earth with a layer of gold four meters thick'*.

Modern mantle, however, has an enriched character with  $\bullet W = 0$ , suggesting events that have enriched the earth's mantle with precious metals including gold after 4

Ga. This has been attributed to the late accretion on the earth by the heavy bombarding events during the 'hellish period' (Hadean) that the earth went through during 4.5-3.8 Ga. According to Dr. Mathias and his colleagues *'most of the precious metals on which our economies and key industrial processes are based have been added when the earth was hit by 20 billion billion tonnes of asteroidal material'*.