Introduction: DaG 1054 is a new meteorite found in 1999 by Romano Serra during a scientific expedition in the Dar al Gani rocky desert area of Libya. The meteorite consists of a single stone weighing 28.4 g, with no traces of fusion crust. A cut surface on one side reveals an achondritic texture. The type specimen (8g), a thick section and a polished thin sections are on deposit at Museo di Scienze Planetarie, Prato, Italy (inv. N° 5138). The Museo del Cielo e della Terra (OAM), Bologna, Italy holds the main mass [1].

Description: The sample has a very fine-grained, homogeneous unbrecciated and mosaicized texture mainly consisting of very small (up to 30 μm) rounded and non-zoned olivine crystals and rare orthopyroxene (Fig. 1a). Carbon-rich material, including very small diamond grains, occurs at grain boundaries but no distinct aggregates of carbonaceous material are visible. Opaque phases are formed almost exclusively by Fe-silicides of non-stoichiometric suessitic composition, dispersed in small to very small (up to 100 μm across) grains or subparallel veins, frequently altered to oxides (Fig. 1b). Very rare sulfide grains (mainly troilite) can be occasionally found. EMPA analyses performed on olivine and pyroxene provided the following results: Low–Ca pyroxene: Fs_{12.2-20.9}Wo_{0.7-3.6}, Cr_{2}O_{3} = 0.85–0.92 wt%; Olivine (Fs_{11.0-17.1}; CaO = 0.29–0.31 wt%, Cr_{2}O_{3} = 0.80–0.85 wt%). SEM-EDS analyses performed on the suessitic phase proved it to have a variable, non-stoichiometric composition, with 2 main clusters at Fe_{78}Si_{21} at % (Cr = 0.68, Ni = 0.49) and at Fe_{74}Si_{23} at. % (Cr = 1.34, Ni = 1.54). Troilite contains up to 4.3 wt% Cr. The mosaicized structure suggests a high shock stage; weathering grade is low.

Conclusions: Although several features like the fine grained and mosaicized texture are similar to those displayed by polymict ureilites like Haverö, Y-74154, ALH81101 and Almahata Sitta, the thin section contains no coarse-grained clasts and appears homogeneous and unbrecciated. The lack of zoning of olivine and the presence of suessite of variable composition, also reported by [2,3,4,5] for other ureilites, suggest a closer relationship with both NWA 1241 and the fine-grained clast MS-161 of Almahata Sitta [6]. These anomalous features indicate that this meteorite could be a fine-grained monomict clast of a larger polymict body.