
Contribution ID: **411** Type: **Poster Presentation**

# Discovery of microdiamonds and disordered graphite by Raman spectroscopy in a mullite-magnetite-silica glass melt rock of impact origin, Gilf Kebir Plateau, SW Egypt

*Tuesday, 4 July 2017 17:10 (1h 50m)*

Libyan Desert Glass (LDG), discovered in 1933, is a pale green rock of almost pure silica glass loosely scattered over approximately 2500 square kilometres near the Egypt-Libyan border. It has been established that LDG originated during the explosion of an extra-terrestrial agent about 29 million years ago. In 2013 it was reported that a black, diamond-rich, rock fragment discovered in the LDG area years earlier, was a piece of comet, the first such cometary fragment to be found and identified. This cometary fragment was named “Hypatia”. Separate from this discovery, a mullite-magnetite-glass rock sample was collected from an area close to the LDG strewn field in 2007. This melt rock has a composition and mineralogy unreported thus far for any terrestrial magmatic rock. Phase diagrams of the SiO2-Al2O3-FeO-Fe2O3 system suggests a temperature of ˜1600 oC is required to produce the observed composition, consistent with an extra-terrestrial origin, but an absence of high pressure phases thus far seems to indicate against an origin by extra-terrestrial impact. In this presentation we show very recent evidence obtained via Raman spectroscopy of cubic diamond and disordered carbon present on a number of small, irregular dark streaks present in a light grey dull matrix of surrounding material. This discovery of ˜2 micron-sized diamonds present in the mullite-magnetite rock is difficult to explain by a terrestrial process and provides new evidence for the extra-terrestrial origin of the mullite-magnetite rock and its potential association with the LDG and Hypatia.

## Apply to be<br> considered for a student <br>   award (Yes / No)?

No

## Level for award<br> (Hons, MSc, <br>   PhD, N/A)?

N/A

## Main supervisor (name and email)<br>and his / her institution

N/A

## Would you like to <br> submit a short paper <br> for the Conference <br> Proceedings (Yes / No)?

No

**Primary author:** Dr ANDREOLI, Marco (University of the Witwatersrand)

**Co-author:** Dr ERASMUS, Rudolph (University of the Witwatersrand)

**Presenter:** Dr ERASMUS, Rudolph (University of the Witwatersrand)

**Session Classification:** Poster Session 1

**Track Classification:** Track F - Applied Physics