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De Beers Institute of Diamonds, part of De Beers Group, is pleased to share further details of an unusual diamond within a diamond, formally named the 'Beating Heart', which was recently analysed at its facilities in Maidenhead, UK.

The 0.329 carat, D-colour, Type IaAB diamond was found to have an internal cavity enclosing a smaller diamond that is trapped yet free to move around within the space.

Instruments developed by De Beers Group Ignite, including the DiamondView and SYNTHdetect, were used in a preliminary analysis of the diamond, followed by optical and scanning electron microscopy (SEM), Fourier-transform infrared (FTIR) spectroscopy, and fluorescence and phosphorescence imaging.

Initial conclusions suggest the cavity was formed due to preferential etching of an intermediate layer of poor-quality fibrous diamond. The original 'core' would have consisted of good-quality diamond growth. However, a subsequent layer of growth was likely poor and fibrous, followed by a further 'outer coating' of gem-quality crystal. At some point between its formation and travel to the surface of the Earth, the poor-quality layer etched away. Only the better quality material 'survived' this process – the outer diamond and the core – which, in this case, led to a diamond that can freely move around within an inner space.

Samantha Sibley, Technical Educator at De Beers Group Ignite, explains: "I have certainly never seen anything like the 'Beating Heart' during my last 30 years in the diamond sector. Using the expertise of De Beers Group, we can shed light onto the formation and structure of this natural specimen and share these insights with a wider community of diamond professionals."

The Institute of Diamonds was alerted to the specimen in October 2022, when it was raised as a potentially interesting natural anomaly by De Beers Group Sightholder, VD Global (VDG), based in India. The rough diamond was recovered by De Beers Group at one of its four global mining locations (Botswana, Canada, Namibia and South Africa) and arrived at the De Beers Institute of Diamonds facility in Maidenhead, United Kingdom, in November 2022. It was later named the 'Beating Heart' diamond by VDG in recognition of its unusual composition.

The 'Beating Heart' now joins a small group of similar natural diamonds, including the widely publicised Matryoshka diamond from Siberia, Russia, which was first recorded in 2019. The specimen will not be cut and polished and will instead be maintained for research and educational purposes with the consent of VDG and with the support of De Beers Institute of Diamonds.

Jamie Clark, Head of Global Operations at De Beers Institute of Diamonds, adds: “The ‘Beating Heart’ is a remarkable example of what can happen on the natural diamond journey from formation to discovery. We would like to thank VD Global for recognising this diamond's potential and acknowledging its educational and scientific potential. A find like this demonstrates why natural diamond formation and origin is such a fascinating area of study and why it is important to strive for advancements in testing and analysis that can contribute to our knowledge of natural diamond growth.”