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Black diamonds born in space

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New analysis of the world's toughest diamonds suggests they may be visitors from deep space, possibly the unaltered chunks of a long dead, exploded star.

The evidence comes in the form of telltale traces of nitrogen and hydrogen in black 'carbonado' diamonds, which don't match any terrestrial signature.

Instead, the molecules seem to reflect a mixture of gases seen in interstellar space, says Professor Steve Haggarty of Florida International University.

He and colleagues publish their research in a recent issue of *Astrophysical Journal Letters*.

"There is absolutely nothing to compare with these objects," says Haggarty.

"[A total of] 600 metric tonnes of carbonado diamonds have been mined, stolen, bartered and adorned in the last century."

That's a small fraction of the world diamond supply and it all comes from just two places: the Central African Republic and Brazil. Oddly enough, neither place has any of the expected geological signs of being a diamond-bearing region.

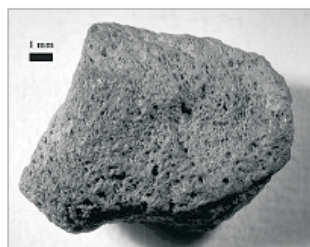
Interest in carbonados is more than academic.

These diamonds are particularly prized because they are just as hard as regular diamonds but far tougher under stress. That makes them extremely sought after for industrial drilling and cutting.

Finding out how carbonado diamonds are created would not only help geologists search for more, but help diamond makers figure out how to synthesise the useful gems, Haggarty says.

The extraterrestrial trace elements the researchers found fits some other suspicious signs in the minerals, says Haggarty.

For one thing, carbonado diamonds are very porous - a strange thing for a mineral thought to have formed under extreme pressures deep in the Earth.



Black or carbonado diamonds, like this, are only found in two places on Earth, the Central African Republic and Brazil (Image: Steve Haggarty)

The diamonds also often have a glazed side that appears to be some sort of weathering, says Haggarty.

No known Earth weather can do that to a diamond. So was it, perhaps, the hard radiation 'weather' of interstellar space?

Another puzzle is those two locations. Take plate tectonic movement of the continents back in time and the Central African Republic and Brazil are joined.

"It's exactly the same piece of real estate," says Haggarty. "Not a single carbonado has been found in a conventional diamond setting."

One possible explanation is that the carbonado diamonds are a chunk of a star that exploded long before the formation of the Sun. The chunk was floating through space and was caught up in the formation of Earth, and it's been here ever since.

"I think that is not an unreasonable idea," says geologist and researcher of ancient minerals Professor Robert Hazen from the Carnegie Institution of Washington's Geophysical Laboratory.

"They are perhaps the oldest thing you can hold in your hand."



Standard diamonds like this one are hard but not as tough under stress as the black or carbonado diamonds (Image: iStockphoto)

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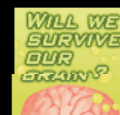
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