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Cosmic stone Mahadeva that hit Bihar village decoded at Physical Research Laboratory

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AHMEDABAD: A space rock weighing 15kg sped through the skies crackling and by sheer cosmic chance, on July 22, 2019 afternoon, tore into a water-laden paddy field near Mahadeva village, 6km east of the Laukahi police station, in Madhubani district of Bihar.

The meteorite was named Mahadeva. Scientists at Physical Research Laboratory (PRL) in Ahmedabad have been conducting studies on the meteorite for over a year now and in their latest report has classified it as an H5/6 chondrite — a type of stony meteorite responsible for 31 per cent of Earth's impacts.

DESCENDING FROM HEAVENS

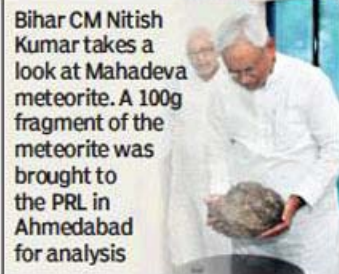
Place	Year	Weight of meteorite	Type of meteorite
Jodiyaa	2006	100g	L5 chondrite
Kaprada	2004	1.6Kg	L5/6 chondrite
Ankhediya Mota	1985	20 Kg	L4/5 chondrite
Dejhala	1976	45Kg	H3.8 chondrite
Behrai	1893	100g	L 6 chondrite
Mahi Kantha 1	1842	Not recorded	Ordinary chondrite

GSI HAS REPOSITORY OF 643 METEORITES

► The Geological Survey of India (GSI) has a repository of 643 meteorites across the country

► The most momentous meteorite fall in Gujarat was when 250 fragments of Dhajala meteorite fell over Kutch. Nearly 70% of the meteorite was recovered. The approximate cosmic ray exposure age of Dhajala meteorite was estimated to be 7 million years

► The Jodiya meteorite that hit tinned roof in 2006 in Gujarat was one of the few that was studied by scientists



Bihar CM Nitish Kumar takes a look at Mahadeva meteorite. A 100g fragment of the meteorite was brought to the PRL in Ahmedabad for analysis

METEORITES THAT HAVE BEEN STUDIED AT PRL:

Ararki (L5), Bhawad (LL6), Devgaon (H3.8), Jodiya (L5), Kaprada (L5/6), Karimati (L5); Kavarpura (Iron, IIE-an), Mahadeva (H5/6), Mahadevpur (H4/5), Mukundpura (CM2), Sulagiri (LL6)



Chondrites are some of the most primitive and pristine rocks in the solar system and have never been melted. “Mahadeva is highly equilibrated chondrite and resembles petrologic type H5/6, a few relict chondrules still can be recognised,” claim Anil Shukla, Dwijesh Ray and Dipak Panda of the PRL in their recently published work in the October edition of Planetary and Space Science journal.

Chondrites, generally speaking, have a distinctive appearance, made from droplets of silicate minerals mixed with small grains of sulphides and iron-nickel metal. Their millimetre-sized granules give chondrites their name, from the Greek ‘chondres’ meaning sand grains.

In Mahadeva most chondrules are in the 250-600 micrometre in size range, and are porphyritic — a rock structure with distinct crystals with the fusion crust. As far as Mahadeva’s composition, the scientists found an abundance of minerals like olivine, low-calcium pyroxene, feldspar (makelynite/plagioclase glass), high-calcium pyroxene, metal, troilite and other minerals like chromite and merrillite.

A 100 gram piece of the meteorite was brought to the PRL for tests while the rest is in being displayed at the Bihar Museum in Patna. The Bihar farmers who witnessed the meteorite fall were Rajkumar Prasad, Bihari Yadav and Rajkumar Khatwe of Mahadeva village. The meteorite’s fusion crust — a thin melted surface layer of thermally transformed components of a meteorite — is described as a relatively smooth, dull brown, with small rounded indentation.