

BBC *SEE SATURN'S RINGS BEFORE THEY TILT AWAY*

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Sky at Night

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Why summer's best meteor shower
promises a spectacular display

**SUPER
BLUE MOON**

See two perigee full
Moons this month
Details inside

**10 SIGHTS TO MAKE YOU
LOVE THE MOON AGAIN**

**GET READY FOR THE
U.S. SOLAR ECLIPSES**

**THE WILDEST WEATHER
IN THE SOLAR SYSTEM**

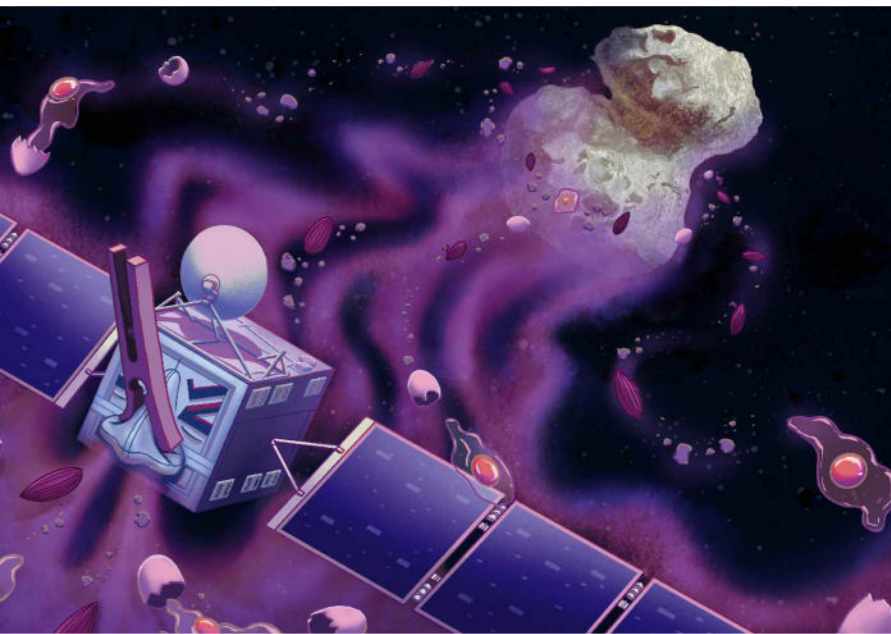
**ACTIVITY ON THE SUN: IS
THE BEST YET TO COME?**

**IOPTRON'S COMPACT
GO-TO MOUNT ON TEST**

FIELD OF VIEW

What does space smell like?

From rum to rotten eggs, **Jonathan Powell** turns his nose to heaven's scents



Jonathan Powell is a freelance writer and broadcaster. A former correspondent at BBC Radio Wales, he is currently astronomy columnist at the *South Wales Argus*

From the James Webb Space Telescope's amazing Pillars of Creation photo to the Event Horizon's image of a black hole, we've captured many dramatic and colourful representations of space in a visual sense. We've also captured sounds from space, whether that's the eerie electron 'whistler waves' produced by Earth's Van Allen belts or a meteor's sonic boom as it streaks across the night sky. But what about the smell of space?

In fact, space carries a whole array of odours and to experience some of them we need not travel very far. One such on-your-doorstep occurrence came courtesy of the Winchcombe meteorite. Zipping over the UK on the last day of February 2021, it was widely witnessed, captured by everything from doorbell cameras to vehicle dashcams. After its impact in the area of Winchcombe, a village in Gloucestershire, various fragments were recovered, with reports of a "compost-like" smell emanating from some of the remains. This odour suggested the presence of organic compounds and indeed the meteorite was later classified as carbonaceous chondrite, a throwback to the early formation of the Solar System.

As well as rocks landing on Earth from space, astronauts returning from space have also noted distinct aromas. Once back on solid ground, upon removing their helmets many space travellers have reported experiencing the odour of seared steak, hot metal and welding fumes. During the Apollo 11 mission, Buzz Aldrin commented that his suit smelled like "burnt charcoal" when it was coated with lunar dust. And on board Apollo 17, Harrison Schmitt stated that, "All I can say is that everyone's instant impression of the smell [of the Moon] was that of spent gunpowder".

What could explain these odours? High on the list of contenders is the possible chemical reaction with substances carried on their spacesuits, which would generate a similar odour as astronauts re-enter the airlock of their spacecraft from an airless environment, the repressurisation creating a sort of oxidation process, like combustion.

Another explanation could be compounds found in the remnants of long-dead stars, whose essence fills the cosmos. Called polycyclic aromatic hydrocarbons, these are the often-toxic by-products of combustion found in coal, oil and even food.

When it comes to toxic odours, spare a thought for the ESA Rosetta mission. Its 2014 encounter with Comet 67/P Churyumov-Gerasimenko was not only a challenge for those wishing to pronounce it correctly! As the craft followed and monitored the comet, its ROSINA instrument (the Rosetta Orbiter Spectrometer for Ion and Neutral Analysis) inhaled a noxious mix of rotten eggs (hydrogen sulphide), horse urine (ammonia) and almond (hydrogen cyanide), along with formaldehyde.

Even further out into space there's Sagittarius B2, a molecular cloud of gas some 28,000 lightyears distant, which contains huge amounts of ethyl formate, the chemical compound responsible for giving raspberries their flavour and rum its smell – an ideal arena for any space pirates.

The visual aspects of astronomy command so much of our attention, but we shouldn't neglect the aromatic notes of space. For, beyond pictures, they give us a keener sense of what the Universe we live in is composed of. 🌌