







## Exploring the world. Decoding the mystery of the 1600-Year-Old Rust-Free Iron Column, an 'Ancient Wonder'.aa

The Quwwat-ul-Islam Mosque complex in New Delhi is home to an ancient wonder of metal work – a 1,600-year-old iron pillar that is exceptionally resistant to rust.

The Iron Pillar of Qutub Minar, as this ancient monument is sometimes referred to, measures 7.21-meters-tall, has a diameter of 41 centimeters and weighs about 6 tons. It's also more than a millennium and a half old, believed to have been erected during the reign of Chandragupta II, one of the most powerful emperors of the Gupta Empire. And even though it has spent all that time outdoors, the Pillar of Qutub Minar shows almost no sign of rust damage. For decades, scientists and metal workers from all over the world speculated about the properties of this unusual marvel, and it wasn't until 2003 that the mystery was finally cracked.



There was a time when many believed that the rust-resistant pillar was made out of some mysterious, non-earthly metal, while others speculated that whoever made it used a futuristic technique that was lost in the mists of time. That second theory is technically true, as metallurgists at Kanpur IIT demonstrated in a paper published in the journal *Current Science*.

R Balasubramanian, co-author of the study, called the pillar “a living testimony to the skill of metallurgists of ancient India,” explaining that the wrought iron structure features a protective layer called “misawite”, an amorphous iron oxyhydroxide that forms a barrier by adhering next to the interface between metal and rust. The formation of misawite is caused by the high phosphorus content in the iron.



