

NATURE TO RETRACT MAJOR RANGA DIAS SUPERCONDUCTIVITY PAPER: REPORTS

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Ranga Dias, March 2023. | Photo Credit: Screenshot from University of Rochester video/YouTube

Controversial University of Rochester physicist [Ranga P. Dias](#) face a potential third retraction of a paper related to his work on room-temperature superconductors in a year, after the co-authors of a study published in March 2023 have asked for it to be retracted following concerns over the integrity of its data.

The paper, published by the journal *Nature*, reported that a compound called lutetium hydride becomes a superconductor with the addition of a small amount of nitrogen atoms and high pressure.

Against the backdrop of an investigation ongoing by the University of Rochester into Dr. Dias's work, his coauthors – mostly graduate students at the time the work was conducted – wrote a letter to Tobias Rödell, a senior editor at *Nature*, [The Wall Street Journal](#) reported on September 26.

In the letter, the group urged the journal to retract the paper because, *The Wall Street Journal* said it added, the paper had misrepresented measurements of electrical resistance and heat capacity – which are [used to infer](#) that a material is superconducting. The group also wrote that its members had notified Dr. Dias of these concerns but that he had “largely dismissed” them as well as that “some of us were instructed by Dr. Dias not to probe further into the issues raised and/or not to worry about such concerns”.

Dr. Dias told the newspaper, “I have never engaged in the fabrication, manipulation, or misrepresentation of data in any of my research endeavors.”

The newspaper also reported that at least six of the co-authors of the paper had received an email earlier in September from Dr. Dias in which he threatened them with a defamation lawsuit if they didn't “cease and desist” their correspondence with editors at *Nature*.

On May 2, two physicists who were unidentified at the time also submitted a note to *Nature* in which they criticised the results described in the published paper. [Science](#) reported on September 27 that they were James Hamlin (University of Florida) and Brad Ramshaw (Cornell

University).

In their note, Drs. Hamlin and Ramshaw had also raised concerns about the electrical resistance plot. In their paper, Dias et al. had written that the resistance was measured with some noise and that the noise had been subtracted later, leaving only the resistance signal. But critics have alleged that the subtraction removed more than just noise and that the signal left behind looked anomalous.

At least one attempt to replicate the findings of the lutetium hydride paper, by Russell Hemley (University of Illinois Chicago) claimed to have found evidence that the material becomes a superconductor in the circumstances described in the March 2023 paper. But independent experts have said its “resistance measurements may be flawed,” according to *Science*, even as Dr. Hemley has stood by his findings.

On September 26, 2022, *Nature* had retracted another paper of a study led by Dr. Dias that purported to show that a compound of carbon, sulphur, and hydrogen became a superconductor, over concerns about data of the material’s magnetic susceptibility. In August 2023, *Physical Review Letters* retracted another paper led by Dr. Dias in which his group reported superconductivity in manganese sulphide. The paper was retracted again over concerns with the electrical resistance measurement.

Dr. Dias has founded a company, called Uearthly Materials, to commercialise his findings. A superconductor that can work in ambient conditions is expected to revolutionise a plethora of fields and industries, including high-energy physics, electrical engineering, and medical diagnostics. But the slew of retractions is expected to increase scrutiny of its plans and the \$16.5 million it has raised from investors, per [The New York Times](#).

The journal *Nature* is also under the lens for its vetting process, which has thus far allowed two problematic papers to get through before facing the prospect of retraction.

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