The Telegraph
calcutta, india



# Shortcut to bond formula

## - Tripura professor devises 'quick' solution

SEKHAR DATTA

Dr. Arijit Das

Agartala, March 5: He has brought about what may be legitimately termed as a "mini-revolution" in the study of chemistry for students at the higher secondary level and beyond.

The new formulae devised by Arijit Das, a PhD in chemistry from Tripura Central University and **currently head of the department of chemistry in North Tripura's government-run Dharmanagar College, will help students determine the bond order of matter within three to five seconds**.

**This is in stark contrast to the Molecular Orbital Theory (MOT) followed for the past one-and-a-half centuries that takes at least five minutes to determine the chemical bond order of matter**.

Das had **earlier invented four new formulae for easier calculation of hybridisation and International Union of Pure and Applied Chemistry (IUPAC) method** last year to universal acclaim from academics and institutions across the country. **He has this time invented three new formulae for quickest calculation to determine the bond order or bonding pattern in matter**.

"I had been working on this for a long time and, in fact, was engrossed in this because while teaching students my sole concern has always been to present them with the easiest and quickest methods using which they can learn quickly. Finally I had cracked the bond order problem in December last year," said Das, **an unassuming man who had donated the entire amount of incentive he had received to Ramakrishna Mission and the chief minister's relief fund**.

A resident of Kailasahar subdivision in Tripura's Unakoti district, Das is the son of a chemistry teacher. His wife, too, is a teacher of chemistry.

While working as a scientist in the state forensic laboratory, he had been dreaming of joining a college or university for his first love as a profession was teaching.

Das's invention has been recognised by institutions like IIT Kharagpur.

"When my article announcing the new formula for determining the bonding of matters came out in the nationally-acclaimed **standard journal *Chemistry Today* -Volume-22(02), pages 13-14 in February this year**, scholars of

chemistry across the country took notice and I started receiving congratulations and appreciation," Das said.

**In his appreciation, Pratim K. Chattaraj, a professor of IIT Kharagpur, said: "Excellent method. I went through both of your notes. You have provided useful mnemonics for hybridisation and bond order. Students and teachers will remember these aspects easily."**

**Chattaraj told The Telegraph what Das has done is to develop a mnemonic, or a method of memorisation, that allows chemistry students to quickly (3 to 5 seconds) determine the bond order (single, double, triple) when given the number of electrons in a molecule.**

But it does not work for all molecules. For example, it will not work for molecules with more than 20 electrons. Chattaraj says he has pointed this out to Das in an email.

**Samar Kumar Das, a professor of Hyderabad University, called for inclusion of formulae devised by Das in higher secondary school text books and onwards for the benefit of students**.

"Quite naturally I am greatly enthused by these appreciation but I feel happier to think that my work will help the students learn easily," said Das, who is also the reviewer of the London-based internationally-acclaimed chemistry journals of the world, *Inorganic Chemistry Communication* published by Elsevier and *Journal of Co-ordination Chemistry*.

Chattaraj also said that the value of any scientific work is determined by whether it is published in a peer-reviewed journal. This kind of work should be published could, for instance, be published in the *Journal of Chemical Education*.

**Overall, Chattaraj says this is good work**.