



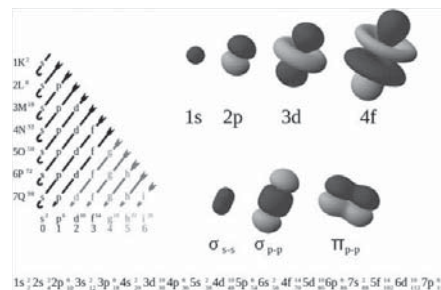
27 Hello Didi!

Neeraja Raghavan

Hello Didi*,

I was a student at Rajghat. You introduced us to quantum mechanics using the analogy of an architect’s building that is upside down. Despite being weak in chem I don’t forget that introduction. It is so nice to find you here. Kindly add me to your network. Regards, MST

This mail that flew into my LINKED IN INBOX a year ago was a reminder of an innovative teaching practice that I had adopted – after reading it in some book (there wasn’t any Internet in those days) – when I first taught Chemistry.

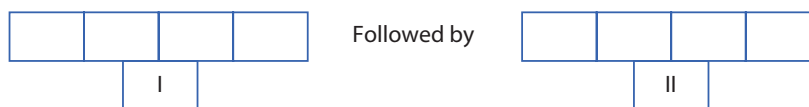


Electronic configuration is a tough concept for students to absorb: where electrons occupy successive shells around the atomic nucleus with a maximum occupancy of $2n^2$ (where n is the number of the shell), and with *single occupancy* of orbitals until and unless a higher shell has to be occupied. This book had suggested the use of the analogy of a building built by a mad architect. Mad, because he proposed to have n^2 rooms in each floor: and each room could have a maximum of only two occupants. With the result, that the first three floors of the building looked like this:

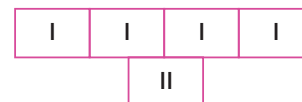
This ‘upside down’ building that resulted now had to be occupied by tenants: but only two could be housed in each room. Being fussy people, they refused to double up until and unless it meant that their only alternative was to climb up another floor!



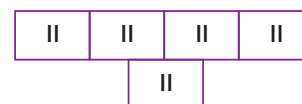
This implied that the floors got sequentially occupied (a vertical line I denotes a tenant) thus:



And then, since the ground floor was full, the next four tenants would spread themselves across the four available rooms on the first floor, thus:



and doubling up only when all rooms were singly occupied, thus:



The analogy would extend to the higher floors in a similar manner, and students in the class would themselves draw the pattern of occupancy, using the simple principle that no one shares the room unless faced with a tougher option: of climbing another floor!

From this e-mail, I realized that this was a simple yet powerful innovation to teach electronic configuration.

NEERAJA RAGHAVAN is Professor, Azim Premji University Resource Centre, and she works in the Academics and Pedagogy section. She can be contacted at neeraja@azimpremjifoundation.org

* Didi is a form of addressing a teacher in some schools, meaning elder sister