Editorial

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While the physicist is concerned with four forces in Nature and their unification, only one of them, viz., the electromagnetic, is the only one that is of interest to the chemist. All the bonding and non-bonding interactions that chemists use so successfully in their work ultimately have their origin in the electromagnetic forces. Still the chemist, who likes to classify things, talks about covalent and ionic bonds, hydrogen bond, van der Waals interactions, etc. While covalent and ionic interactions are strong, the others are comparatively weaker. Of the weak interactions, the hydrogen bond is the most important and interesting one. Recently other weak interactions involving the halogens, beryllium chalgogens and pnicogens have been suggested. In the past few months, a new interaction has been added to this list – the 'carbon bond'. The proposal was made first by D Mani and E Arunan (*Phys. Chem. Chem. Phys.*, Vol.15, p.14377, 2013) of the Indian Institute of Science (IISc). What they found was that the carbon atom of CH_3OH can have an interaction with a hydrogen atom of water, in which the H-atom is located on the side that is diagonally opposite C–O bond in methanol. Experimental confirmation of the interaction was given by S Thomas, M S Pavan and T N Guru Row of IISc (see *Chem. Commun.*, Vol.50, p.49, 2014). This interaction has been called the *carbon bond* and has attracted quite a bit of attention as it is expected to be useful in understanding the reactivity of organic molecules, their hydrophobicity. Due to these, it should be of immense interest in biology too.

While the chemists are concerned only with the effects of the electromagnetic interaction, physicists are keen on understanding and unifying the four forces. This issue of *Resonance* features the life and contributions of the Italian physicist Fermi, who made an important step in this direction. Fermi was one of the giants of his time, whose contributions are covered in an article by N Mukunda. He formulated the theory of the weak force that is responsible for beta decay, a contribution that is discussed in the article by G Rajasekaran. This month's Classics is a paper by Fermi on the Fermi–Dirac statistics. We are thankful to R Srinivasan for this excellent translation of this article from German. The statistics itself is the subject of an article by S Chaturvedi and S Biswas. Fermi's approaches to seemingly unanswerable questions is proverbial and has found its way into even management curricula. These are described in an excellent article by R Nityananda. The subject of Fermi transport is discussed by J Samuel. *Resonance* would like to thank N Mukunda and Biman Nath who have put together this issue on Fermi, and hopes that the readers would enjoy the articles.

Resonance wishes its readers a very happy and prosperous new year.