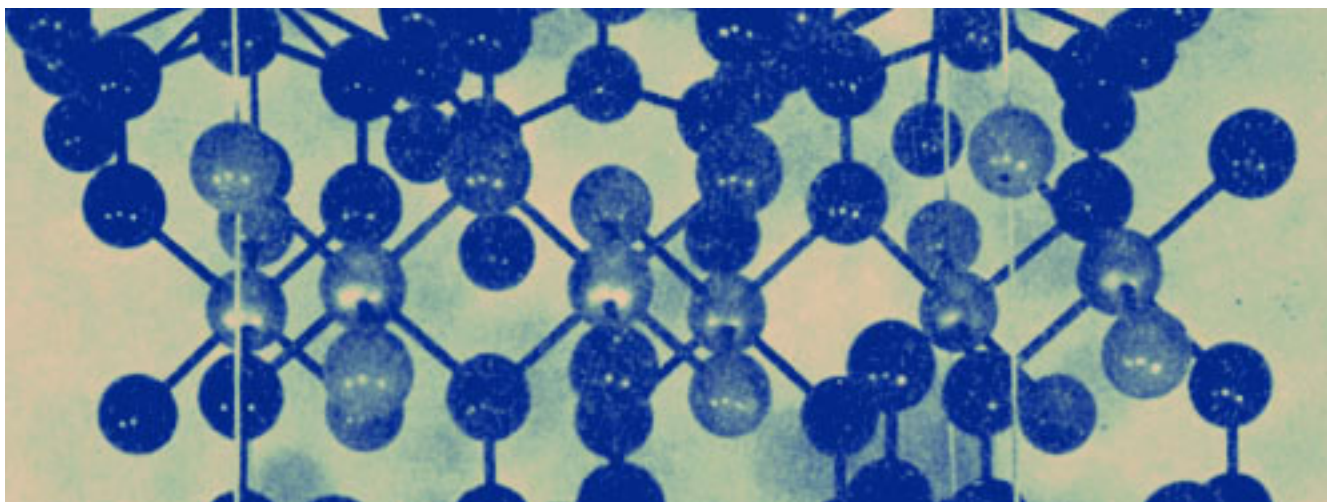




Molecular Forces



During the Study Week on “Molecular Forces” we discussed the experimental determination of the electromagnetic charges responsible for the electromagnetic field surrounding a molecule, as well as the experimental need to follow the rules of wave mechanics to describe the interaction of these molecules.

We also examined the generalization of the well-known London electrodynamics theory, especially with regard to magnetic and relativistic interactions.

A theoretical discussion followed on the problems of the macroscopic theory of van der Waals forces at great distances, on the order of the wavelength of visible light and on the effect due to delay as a result of the limited propagation speed of electromagnetic radiation.

Finally, an analysis of the molecular forces in the solid crystalline state was made.

In recent years, much attention has been focused on understanding the structure of liquids and especially the particular effects that occur near the critical point. In this area we examined experimental evidence concerning the scattering of light and X-rays near the critical point. We also discussed, from a theoretical point of view, the remarkably long range correlations as well as their correlation with short range molecular forces.

The liquid state itself and its constitution, especially in liquids with single molecules, have been discussed from a theoretical point of view and emphasizing the behavior around the critical point. We found it interesting to listen to as many diverse opinions on the subject as there are national schools.

At the same time many problems arose with regard to our understanding of the origin of molecular forces in the biological sciences. The presence of eminent personalities who were experts in the field undoubtedly made an essential contribution to the subject itself.

Pietro Salviucci
(PAS Chancellor)