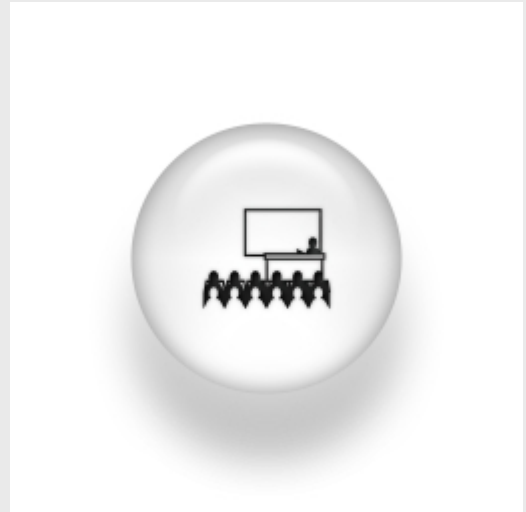


## Organic and inorganic semiconductor interfaces across physics, chemistry and time

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### ABSTRACT:

Our understanding of the fundamental properties of solid surfaces and interfaces has seen a great development in the last 30 years due mainly to some experimental developments such as synchrotron radiation and the scanning tunneling microscope. Inorganic semiconductor interfaces will be quickly reviewed in this talk with special emphasis on their physical and chemical properties, such as electronegativity, charge neutrality level and metal/semiconductor barrier height. Organic interfaces will be discussed in more detail considering the metal/organic junctions formed between Au and C60, TTF, TCNQ or PTCDA. The “organic energy gap problem” will be addressed, as well as the concept of the charging energy of the organic molecule: these quantities will be related to each other and to the metal/organic interface barrier height; examples for different organic/Au interfaces calculated using a first-principles DFT approach will be shown. The connection between the molecular (or the nanocontact) and the monolayer limits for these organic/metal interfaces will also be discussed. Finally, organic/organic interfaces will be reviewed using the concepts of the organic charge neutrality level and the interface screening.