

EINLADUNG ZUM  
**WIENER PHYSIKALISCHEN KOLLOQUIUM**

From Free-Flying Fullerenes to Nanoelectromechanics: the fascinating properties of nano carbon

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Carbon nano materials have generated considerable interest over the past 30 years, from the discovery of the fullerenes in 1985 to carbon nanotubes in 1991 and graphene in 2004. The  $sp^2$  hybridised bonding of the carbon atoms in all these nano materials leads to very interesting properties that are currently being developed and exploited in a number of commercial applications. The recent laboratory confirmation of the presence of fullerenes in interstellar space may have far-reaching consequences for our understanding of astrochemistry. In this talk I will briefly review some of the fundamental studies of the properties of fullerenes that my group has been involved in over the past 30 years that can help explain how fullerenes survive the harsh conditions of space. I will also discuss our more recent studies of the application of Rydberg Fingerprint Spectroscopy to probe excited electronic states in gas phase fullerenes and relate these to the formation of nearly-free electron bands in fullerene solids. Our nanotube work has been more focused on growth studies, the fabrication and proof of principle demonstrations of nanoelectromechanical devices and, more recently the synthesis of carbon nanotube based porous materials for gas capture and purification applications. Some examples from these studies will be given.

**Montag, 18. Jänner 2016, 17:30 Uhr**  
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