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Casiraghi [ITEM CSL\_CITATION {"citationID":"3PAIYqNm","properties":{"unsorted":false,"formattedCitation":"(Casiraghi et al., 2005)","plainCitation":"(Casiraghi et al., 2005)","noteIndex":0},"citationItems":[{"id":3129,"uris":["http://zotero.org/users/4845974/items/TFNBZGCN"],"itemData":{"id":3129,"type":"article-journal","abstract":"We present a comprehensive multiwavelength Raman investigation of a variety of hydrogenated amorphous carbons (𝑎−C:H), ranging from polymeric 𝑎−C:H to diamond-like 𝑎−C:H and ta-C:H, which allows us to derive values for their bonding, density, band gap, hydrogen content, and mechanical properties. The Raman spectra of 𝑎−C:Hs show two different trends. In one case, the 𝐺 peak width increases with 𝐺 peak dispersion. In the second case, the opposite trend is found. In the first case, the Raman parameters vary with optical, structural, and mechanical properties in the same way as in hydrogen-free carbon films. In the second case, typical of polymeric 𝑎−C:H, the 𝐺 peak width correlates with the density, while the 𝐺 peak dispersion varies with the optical gap and hydrogen content. This allows a unified picture of bonding and disorder of all carbon films. UV Raman is particularly useful for 𝑎−C:Hs, as it gives clear measurements in the 𝐷 and 𝐺 peaks spectral region even for highly hydrogenated samples, for which the visible Raman spectra are overshadowed by photoluminescence. On the other hand, the slope of the photoluminescence background in visible Raman spectra can be used to estimate the H content. UV Raman measurements also allow the detection of CH stretching vibrations.","citation-key":"casiraghiRamanSpectroscopyHydrogenated2005","container-title":"Physical Review B","DOI":"10.1103/PhysRevB.72.085401","issue":"8","journalAbbreviation":"Phys. Rev. B","page":"085401","publisher":"American Physical Society","source":"APS","title":"Raman spectroscopy of hydrogenated amorphous carbons","volume":"72","author":[{"family":"Casiraghi","given":"C."},{"family":"Ferrari","given":"A. C."},{"family":"Robertson","given":"J."}],"issued":{"date-parts":[["2005",8,1]]}}}],"schema":"https://github.com/citation-style-language/schema/raw/master/csl-citation.json"}](https://www.zotero.org/)

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