



IAUS-REG-NUMBER: IAUS-115

NAME: Marco A. Gómez-Muñoz

AFFILIATION: Instituto de Astrofísica de Canarias

CONTRIBUTION: Poster

TITLE: Possible detection of hydrogenated amorphous carbon grains in the UV spectra of C-rich planetary nebulae

AUTHORS: M. A. Gómez-Muñoz (1,2), D. A. García-Hernández (1,2), A. Manchado (1,2,3), R. Barzaga (1,2), and T. Huertas-Roldán (1,2)

AFFILIATIONS: (1) Instituto de Astrofísica de Canarias, E-38205 La Laguna, Tenerife, Spain; (2) Departamento de Astrofísica, Universidad de La Laguna, E-38206 La Laguna, Tenerife, Spain; (3) Consejo superior de investigaciones científicas (CSIC)

ABSTRACT:

Several planetary nebulae (PNe) have been found to contain PAHs and fullerenes in their mid-infrared spectra. Previous work suggest that their formation is related to the decomposition, by photochemical processing, of hydrogenated amorphous carbon (a-C:H or HAC) grains, which is also a potential carrier to the far-ultraviolet (FUV) rise common to interstellar extinction curves. Our goal is to investigate the presence of an a-C:H extinction component by analysing the International Ultraviolet Explorer (IUE) spectra of C-rich (fullerene-containing) PNe. We study the UV spectral range of four C-rich PNe. Their IUE spectra are corrected for interstellar extinction (using a Milky-Way average extinction curve), and then fitted by composite synthetic models, including the nebular and stellar continua. We found that two out of the four PNe shows an absorption in the FUV rise and their IUE continuum spectra could be very well reproduced by including the extinction curve of a-C:H very small grains (VSG). Similar results were obtained by fitting a photionization model, including the optical constants n and k compiled with a VSG. The presence of both species, a-C:H grains and fullerenes seems to support the idea that the formation of fullerenes in PN circumstellar envelopes takes place via the photochemical processing a-C:Hs grains.