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OPTICAL PROPERTIES OF DUST GRAINS AND DEPLETION IN PN IC 418

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Starting from a self-consistent stellar and nebular model of the planetary nebula IC 418, we aim to reproduce the IR dust emission with Cloudy models. We use the optical properties of different dust grains and their corresponding emission features. We investigate the degeneration between the size of the dust grains and their distance to the central star, both acting on the dust temperature, and therefore the dust emission. IR emission shows two broad features at 11.5 and 30 μm. We explored different morphologies of SiC & MgS dust grains as posible carriers for these features. This carbon rich nebulae has the highest observed Fe depletion (-3 dex), and a less important depletion for other elements (-0.5 to -1 dex). From the best fit model for the dust emission, we determine the posible depletion factor for C, Si, Mg and S.

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DESTRUCTION OF PAHS BY X-RAYS IN CIRCUMNUCLEAR REGIONS OF AGNS

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Emission bands associated with PAH molecules are observed in the direction of some classes of AGNs like Seyfert 2, LINERs and obscured quasars (e.g. Kaneda et al., 2008, Sansigre et al., 2008 and Sales et al. 2013). The molecular stability in these environments suggest the presence of very dense gas ($\sim 10^{23-24}$ cm^{-2}) to shield the cloud of PAHs against X-ray radiation (Voit, 1992, Tielens, 2011, Sales et al., 2013). We examined the photochemistry of simple PAHs: naphtalene ($C_{10}H_8$), anthracene ($C_{14}H_{10}$), methyl-anthracene ($C_{15}H_{12}$) and pyrene ($C_{16}H_{10}$) at the photon energies of 275 eV, 310 eV, 1900 eV and 2500 eV in order to apply the findings at the AGN scenario. The absolute single and double photoionization and photodissociation cross sections were determined for each molecule at each energy. Their ionization and destruction induced by X-rays were examined in the conditions of the circumnuclear region of NGC 1808, a Seyfert 2 galaxy, where PAH emission was detected at 26 pc from the central object (Sales et al., 2013). It was verified the higher photostability of PAHs without functional groups attached. At higher photon energies, the results suggest a higher production yield of double charged PAHs in comparision with the single charged ones (e.g., 2 $\times$ higher for double ionized naphtalene at 2500 eV). The production of double charged molecules increase with the size of the molecules. We also discuss a minimum formation rate of PAH to balance the photodestruction rate and maintain a minimum density for their detection (e.g. $4{,}0\times10^{-7}$ $M_\odot$ year^{-1} for a column density N_H of 10^{23} cm^{-2} at 26 pc).

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