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Polycyclic aromatic hydrocarbon emission toward the Galactic bulge

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We examine polycyclic aromatic hydrocarbon (PAH), dust and atomic/molecular emission toward the Galactic bulge using *Spitzer* Space Telescope observations of four fields: C32, C35, OGLE and NGC 6522. These fields are approximately centered on (l, b) = (0.0°, 1.0°), (0.0°, -1.0°), (0.4°, -2.1°) and (1.0°, -3.8°), respectively. Far-infrared photometric observations complement the Spitzer/IRS spectroscopic data and are used to construct spectral energy distributions. We find that the dust and PAH emission are exceptionally similar between C32 and C35 overall, in part explained due to their locations—they reside on or near boundaries of a 7 Myr-old Galactic outflow event and are partly shock-heated. Within the C32 and C35 fields, we identify a region of elevated Hα emission that is coincident with elevated fine-structure and [O ı⊠] line emission and weak PAH feature strengths. We are likely tracing a transition zone of the outflow into the nascent environment. PAH abundances in these fields are slightly depressed relative to typical ISM values. In the OGLE and NGC 6522 fields, we observe weak features on a continuum dominated by zodiacal dust. SED fitting indicates that thermal dust grains in C32 and C35 have comparable temperatures to those of diffuse, high-latitude cirrus clouds. Little variability is detected in the PAH properties between C32 and C35, indicating that a stable population of PAHs dominates the overall spectral appearance. In fact, their PAH features are exceptionally similar to that of the M82 superwind, emphasizing that we are probing a local Galactic wind environment.

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Yes

Primary author: SHANNON, Matthew (NASA/Universities Space Research Association)

Co-authors: Prof. PEETERS, Els (University of Western Ontario); Prof. CAMI, Jan (University of Western Ontario); Dr BLOMMAERT, Joris (Vrije Universiteit Brussel)

Presenter: Prof. PEETERS, Els (University of Western Ontario)

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