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C_2N_2, a possible parent of CN in a cometary coma?

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CN was one of the first molecules detected in cometary comae. However, its origin is still not completely understood. In contrast to what was believed for a long time, HCN can not be the only parent of CN. Other CN sources therefore need to be present.

Using chemical modeling and Giotto mass spectrometry data, we investigate the possibility of C_2N_2 being the missing CN parent. To facilitate the modeling, we have developed software to manage a database of cometary species and reactions and to generate code automatically to compute source/loss balances. The chemical model for a coupled H_2O, HCN, C_2N_2 problem includes 37 species and 136 reactions. The dynamical model computes a spherically expanding chemically reacting coma, with a source located at the top of the Knudsen layer. The simulation is carried out completely within the contact surface.