Nice packings of stars in fullerenes

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Let G be a graph with a perfect matching. A subgraph H of G is nice if G V (H) still has a perfect matching. In a chemical context, nice subgraphs of molecular graphs serve as mathematical models of addition patterns in the corresponding molecules such that the rest of the molecule still has a resonant structure. In this talk we report some results on the existence of nice subgraphs with prescribed components such as, e.g., stars and odd cycles, in classical and in generalized fullerenes. We also report some computational results for small fullerenes and list some open problems.