1023-05-1252 **Zhongyuan Che*** (zxc10@psu.edu), 100 University Drive, Penn State Beaver, Monaca, PA 15061, and **Zhibo Chen** (zxc4@psu.edu), Penn State McKeesport, McKeesport, PA 15132.
Forcing hexagons in a hexagonal system. Preliminary report.

Perfect matchings in hexagonal systems coincide with Kekulé patterns in benzenoid hydrocarbons. It is well known that the concept of forcing edges is related to both chemical and physical problems. Here we introduce the concept of a forcing hexagon in a hexagonal system H, which is a hexagon h in H such that the subgraph of H obtained by deleting all vertices of h together with their incident edges has exactly one perfect matching. We have discovered the co-existence property of forcing hexagons and forcing edges in a hexagonal system, and obtained structural characterizations for the hexagonal systems with a given number of forcing hexagons. (Received September 25, 2006)