

aromatic

1. In the traditional sense, ‘having a chemistry typified by benzene’.
2. A cyclically *conjugated molecular entity* with a stability (due to *delocalization*) significantly greater than that of a hypothetical localized structure (e.g. *Kekulé structure*) is said to possess aromatic character. If the structure is of higher energy (less stable) than such a hypothetical classical structure, the molecular entity is ‘antiaromatic’.

The most widely used method for determining aromaticity is the observation of diatropicity in the ^1H NMR spectrum.

See also *Hückel ($4n + 2$) rule*, *Möbius aromaticity*.

3. The terms aromatic and antiaromatic have been extended to describe the stabilization or destabilization of *transition states* of *pericyclic reactions*. The hypothetical reference structure is here less clearly defined, and use of the term is based on application of the *Hückel ($4n + 2$) rule* and on consideration of the topology of orbital overlap in the transition state. Reactions of molecules in the *ground state* involving antiaromatic transition states proceed, if at all, much less easily than those involving aromatic transition states.

1994, 66, 1086; see also 1995, 67, 1319