

SOLVAY COLLOQUIUM

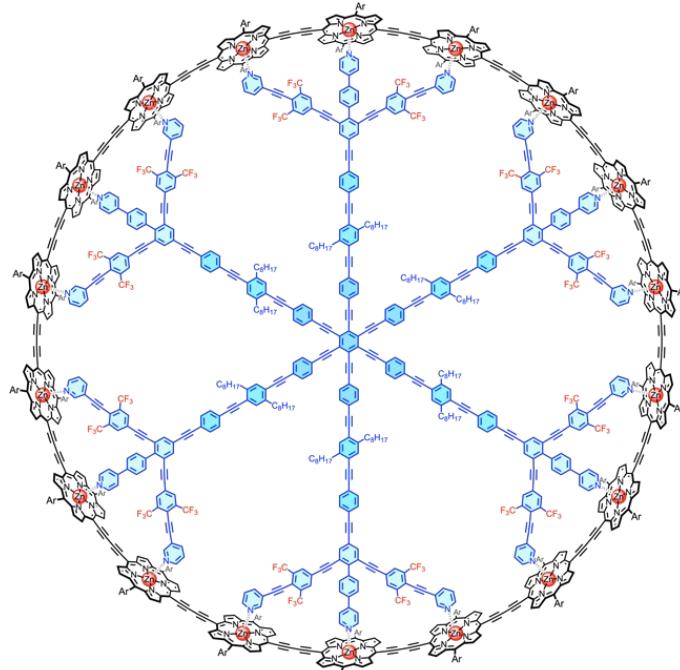


Prof. Harry L. Anderson

Oxford University, UK

How big can they get? What is the size limit of aromaticity?

(Anti)aromaticity arises in molecules with electrons that are delocalized around a circular pathway. Its clearest manifestation is a ring current that is diatropic (aromatic) when the circuit has $4n+2$ electrons or paratropic when it has $4n$ electrons. These ring currents are easily detected by NMR spectroscopy. Most aromatic systems are small rings with up to about 22 π -electrons. In this lecture, experimental evidence will be presented for global ring currents in macrocycles such as the 18-porphyrin nanoring shown below (diameter 8 nm; 242 π -electron circuit in 10+ oxidation state), in which they provide a signature for electronic delocalization.^[1-4]



References: [1] M. Rickhaus, et al. *Nat. Chem.* 2020, 12, 236. [2] M. Jirásek, et al. *Acc. Chem. Res.* 2021, 54, 3241. [3] J. M. Holmes, et al. *J. Am. Chem. Soc.* 2025, 147, 32840. [4] A. Rodríguez-Rubio, et al. *Science* 2025, 390, 290.

Monday 8 December 2025 at 4:30 P.M.

COFFEE AND TEA WILL BE SERVED AT 4:15 P.M. IN FRONT OF THE SOLVAY ROOM

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