Poster

Protein assembly and crystallization with synthetic macrocycles

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Protein crystals, with their ordered assembly of nano-machines, provide a basis for advanced biomaterials design and development. Protein crystallisation, however, remains a challenging, case-by-case endeavour. The challenge arises from the chemical and geometric complexity of protein surfaces. Different strategies are available to overcome this challenge. Water soluble macrocycles are proving to be useful crystallization mediators [1-3]. Symmetric and chemically-uniform, the macrocycle can mask the protein, simplifying the surface and providing a glue for assembly. Recent work with sulfonato-calix[8]arene (**sclx$_8$**) and 5- or 6-bladed β-propeller proteins will be illustrated (Figure 1). Current research on a C_3-symmetric macrocycle will also be presented.

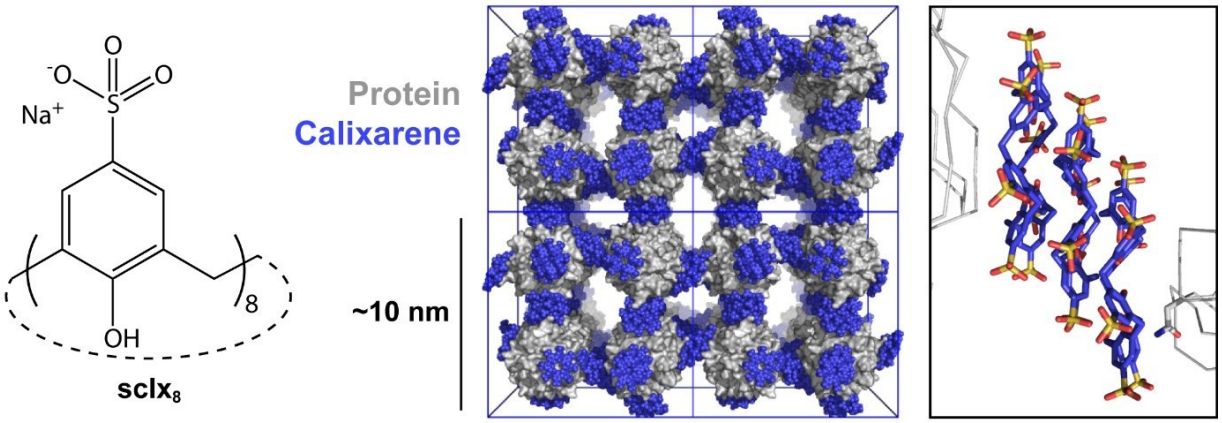

Figure 1. A cubic co-crystal structure of **sclx$_8$** and a β-propeller. Protein *nodes* are connected by trimeric calixarene *links*.

[1] Ramberg, K. O., Engilberge, S., Skorek, T., Crowley, P. B. (2021). *J. Am. Chem. Soc.*, **143**, 1896.

[2] Flood, R. J., Mockler, N. M., Thureau, A., Malinska, M., Crowley, P. B. (2024). *Cryst. Growth Des.*, **24**, 2149.

[3] Flood, R. J., Cerofolini, L. Fragai, M. Crowley, P. B. (2024). *Biomacromolecules*, **25**, 1303.

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