Breaking boundaries, creating connections: The Cambridge Structural Database at 60

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With 2025 marking sixty years of the Cambridge Structural Database (CSD) [1] it is a fitting time to reflect on how structural data has helped break scientific boundaries and create new connections. Since its inception, over 1.3 million organic and metal-organic experimental crystal structures have been added to the resource and it is a truly worldwide effort, with the CCDC curating and enhancing data from hundreds of thousands of crystallographers across the globe.

The beginnings of the CSD can be traced back to 1965 with J.D. Bernal and Olga Kennard, who had the vision and foresight to understand that the collective use of data would lead to the discovery of new knowledge. Their vision has certainly come to fruition today. Both the structures and the database itself have evolved significantly since then, as has its value to scientists worldwide.

Major advances in technology, new structure solution methods, extraordinary developments in computing, and significant advancements in chemistry have all had a dramatic effect on how the CSD has evolved. The growing size, complexity and diversity of the database coupled with the development of new ways to search and analyse the CSD has meant that new insights have been possible, and the data can be used in ways that would once have been unimaginable.

This presentation will explore how the CSD is helping to shape the future of structural science, from making the resource more accessible and equitable through the FAIRE programme, to working with the pharmaceutical industry to help solve real world problems, and to global collaborations that help ensure the data can be utilised across scientific boundaries.

[1] Groom, C. R., Bruno, I. J., Lightfoot, M. P., Ward, S. C. (2016). Acta Cryst. B **72**, 171-179.