THE CRYSTAL CENTURY

From aiding drug design to analysing soil samples on Mars, crystallography has helped to propel much of modern science over the past 100 years.

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While skiing in the Alps over Easter in 1912, the German physicist Max von Laue told his colleagues about an innovative idea: he posited that X-rays passing through a crystal would reflect off atomic centres in the lattice and interfere with each other to create a diffraction pattern. His skiing partners were sceptical, thinking that the thermal jiggling of atoms in a crystal would ruin any pattern. By June, however, von Laue's idea had been proved right; and in 1914 he was awarded the Nobel Prize in Physics "for his discovery of the diffraction of X-rays by crystals", a technique that not only elucidated the behaviour of X-rays but also allowed chemists to deduce the placement of atoms in a crystal.

Since then, X-ray crystallography has gone on to inform almost every branch of science by providing a means to understand the structure of complex molecules and materials. In this special issue, *Nature* celebrates the International Year of Crystallography by examining the impact of von Laue's method and its descendants. A graphic on page 602 summarizes the highlights and evolution of the field over the past century. Looking forwards, a News Feature on page 604 describes how a number of countries have invested in expensive X-ray free-electron lasers to crack some of the most difficult problems in crystallography. And a News & Views Forum on page 620 compares these with synchrotron X-ray sources for applications in structural biology.

Despite the enormous successes of crystallographic research, there are concerns about its future. In a Comment on page 607, physicist Paulo G. Radaelli calls for a governing body to steer the development of large international X-ray and neutron facilities. And a Careers Feature on page 711 explores how jobs in the field are evolving in ways that demand diverse skills.

Taking a historical perspective can point the way to future development. In a Comment on page 609, author Georgina Ferry reflects on how women have had leading roles in crystallography over the past century. "The features of this field that have attracted, retained and encouraged women," she writes, "have lessons to offer for the future of women's progress in science more generally." ■

CRYSTALLOGRAPHY AT 100
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