Crystalllography [from Greek κρυσταλλος (krustallos) ice, crystal + γραφειν (graphein) to write] is the branch of science devoted to the study of molecular and crystalline structure and properties, with far-reaching applications in mineralogy, chemistry, physics, mathematics, biology and materials science.

A founding Father
Paul Peter Ewald (1888–1985) is credited, as a young man, with triggering the train of thought that led Max von Laue to undertake the diffraction experiments that began the science of X-ray crystallography. Already in 1914, while war was still raging, Ewald proposed an international union for crystallography, an idea (nurtured by Lawrence Bragg in 1946) that led, with international support, to the formation of the IUCr in 1947. Ewald was dismayed by the wartime closure of the main crystallography journal, Zeitschrift für Kristallographie, and was foremost in founding a new journal run by the Union: Acta Crystallographica, which became the leading journal in the field.

To mark the centenary of these experiments establishing the modern science of X-ray crystallography, the IUCr has declared the year 2014 to be the International Year of Crystallography, and will mark the anniversary with a broad range of educational activities.

Glittering prizes
Since the establishment of the Nobel Prize in 1901, numerous individuals working in crystallography and X-ray diffraction have been recognised for their achievements in physics, chemistry and medicine.

The IUCr produces a rich website (www.iucr.org) full of information about the Union’s activities, as well as links to the other publishing organizations. The IUCr also supports a range of initiatives and awards, including the triennial Ewald Prize.

Promoting scientific advancement
The scientific activities of the Union are carried out through its 21 individual Commissions, which focus on individual fields such as crystal growth, inorganic and mineral structures, structural chemistry, crystallography in art and cultural heritage, neutron diffraction, theoretical crystallography, aperiodic structures, nomenclature, teaching, and crystallography in art and cultural heritage. The Union supports its efforts to achieve its Aims. There are currently about 40 national members.

An International Union
The members of the Union are national Adhering Bodies, which may be National Academies or national crystallographic societies. The Delegates of Adhering Bodies meet at the General Assembly every three years to oversee the Union’s activities and its efforts to achieve its Aims. There are currently about 40 national members.

Regional Associates represent larger geographic areas, providing a focus for meetings and sharing of facilities on a continental scale. Currently there are three Regional Associates: ACA (American Crystallographic Association), AIC (Asian Crystallographic Association) and ECA (European Crystallographic Association).

ECA meetings have been hosted in affiliated African countries (Morocco, South Africa), and the IUCr is energetically promoting a Crystallography in Africa programme to build capacity on the continent.

A Learned Society Publisher
Uniquely among the Scientific Unions of ICSU, the IUCr publishes its own primary research journals. Acta Crystallographica Sections A–F, IUCrJ, Journal of Applied Crystallography and Journal of Synchrotron Radiation publish research papers in the peer-reviewed journals. The IUCr’s other publishing organization, IUCrPress, issues the IUCr’s Book Series. The IUCr also publishes a highly respected series of textbooks and monographs.

Nurturing the next generation
Thanks to the income from its journal and book publishing activities, the IUCr is in a position to provide practical help to nurture the development of crystallography. It does this through sponsorship and support for schools and meetings, financial support for young scientists, and a Visiting Professorship programme that brings expertise to developing scientific communities.

With the help of a generous endowment from the family of Professor Ewald, founder of the Union, outstanding achievements within the crystallographic community are recognised by the award of the triennial Ewald Prize.

Milestones in the history of the IUCr
1947: IUCr accepted into ICSU
1948: First General Assembly of IUCr
1948: Acta Crystallographica launched
1952: International Tables for X-ray Crystallography
1957: World Directory of Crystallographers
1968: Acta Crystallographica Sections A and B launched
1969: Journal of Applied Crystallography launched
1981: Acta Crystallographica Section C launched
1987: First Ewald Prize
1990: Adoption of Crystallographic Information File ( CIF)
1992: First publication in IUCr/ICUP Book Series
1993: Acta Crystallographica Section D launched
1993: IUCr Newslette
1994: Web-based services launched
1994: Journal of Synchrotron Radiation launched
1999: Online access to electronic journals
2001: Acta Crystallographica Section E launched
2002: All back issues to 1948 are available online
2005: Acta Crystallographica Section F launched
2007: Online access to International Tables
2008: First open-access journal
2014: International Year of Crystallography
2014: IUCr Journals move to online-only publication

Aims of the IUCr
The aims of the International Union of Crystallography are:
1. Promote international cooperation in crystallography
2. Contribute to the advancement of crystallography in all its aspects, including related topics concerning the non-crystallographic sciences
3. Facilitate international standardization of methods, of units, of nomenclature and of symbols used in crystallography
4. Form a focus for the relationship of crystallography to other sciences