

Preface

This issue contains a collection of papers dedicated to Professor Dr. Gerhard Hildebrandt on the occasion of his 80th birthday. The various contributions and their authors reflect his international reputation in the scientific community of x-ray physics, solid state physics and crystallography. The wide scope of the subjects treated in the papers represents the field of impact of the outstanding scientific contributions of G. Hildebrandt.



Gerhard Hildebrandt at the X-Top1994 in Gosen (near Berlin) - discussing x-ray topographs with W. Möhling (right)

Over many years x-ray diffraction was a domain of the so-called kinematic theory because practically all crystals of interest 'did not deserve a better theory' (M. von Laue). With the advent of highly perfect semiconductor crystals the evaluation of single dislocations and other defects became of increasing interest in the fifties of the last century. The contrast of such extended defects in x-ray topography could not be explained by kinematical theory. Fortunately, dynamical theory already existed and several fundamental experiments were already done. One of the extremely surprising results was that x-ray beams in crystals can be curved with rather small radii due to minute strain. Gerhard Hildebrandt, at this time coworker of G. Borrmann at the Fritz-Haber-Institute in Berlin, made this famous experiment in the fifties of the last century (published first 1958; see also *Z.Krist.* 112 (1959) 312 and 340). From this time Gerhard Hildebrandt belongs to the most renowned scientist in the field of x-ray physics.

In addition to his scientific work Gerhard Hildebrandt was also building a bridge between West and East during the time of cold war. We gratefully remember his excellent lecture at the autumn school 'Dynamical Diffraction Theory of X-Rays, Electrons and of Neutrons' at Stolberg/Harz in 1972. From this time he was a regular visitor at many schools and conferences in East Germany despite of all the trouble at the border between western Berlin and East Germany. We also acknowledge his support for younger colleagues and for scientist from East Germany during the time after reunification of Germany.

We admire especially his active work in science after retirement leading to an impressive number of publication not the least about history of science.

All his friends and colleagues wish him many further years of good health and continued interest in science. The editors of Crystal Research and Technology join with these wishes.

R. KÖHLER, W. NEUMANN, Berlin