INAUGURAL ADDRESS

given by Chairman of the Organizing Committee of the International Conference "IMJON-85" at the opening ceremony in Jabłonna on November 28, 1985

Quality deficiency of materials constitutes one of the main barriers that hamper development of engineering and economy.

The said barrier can be eliminated through invention of new materials characterized by better qualities. However, this advisable procedure can be applied only then, when other cheaper and more mass methods fail.

I am thinking here of improving functional qualities of materials not in whole volume, but only in the upper layer, on which depend resistence to abrasive and corrosive wear, fatique strength and other functional qualities.

There are two ways of improving functional qualities of the upper layer.

One of them is based on proper choice of technological parameters of such production techniques qhose chief aim is to shape objects and determine their dimensions in accordance with the claimed accuracy needs. And here come processes of precision casting, sintering, plastic forming, machining and eroding. The optimal selection of technological conditions of the said processes can be such that the upper layer qualities will be better than the workpiece core qualities.

The other way of improving the upper layerqualities covers applyong additional technological operations, after the workpiece has been given an appropriate shape and dimensions.

Chemical processes, allotropic changes, changes of grain size or modification of crystal lattice are being used in these technologies for appropriate changes of functional qualities of the upper layer. A new state of the upper layer, achieved in such a way, can undergo time and space transformations if total energy stored in Technological Upper Layer creates an

unstable system either due to internal physical or chemical processes, or because of interaction of external sources of energy. To them belong for example exploitation processes in which generally either friction or plastic and elastic strain constitute a scure of heat.

Each of the hitherto known technological methods has its good and bad points and in this connection - its specified sphere of intentional justifiable application.

Therefore, one can say that there are not good or bad technologies. There are only technologies used either properly or improperly.

Only the technology which is well known can be applied properly.

This goal, i.e. - comprehensive knowledge covering physical essence, imperative conditions, possibilities and qualities methodology, technical and diagnostic equipment, has been adopted in Poland for recurring IMJON conferences.

The said conferences are devoted to processes of treatment of the upper layer of solid body, especially metal alloys, through matter in state of partial or total ionization.

The first IMJON conference took place in 1980, i.e. 5 years ago. It was held in time, when first experiments were done in Poland in the field of application of ion implantation for practical use. On a world scale it was also an initial stage.

The following years have brought the subdtantial development both in study and application of ion methods. Therefore, the present meeting with specialists, who will exchange information and experiences in this field as well as thoroughly discuss the achieved results is of great importance. It will constitute the foundations for the further trends in research and development works in this field.

I welcome wholeheartedly the authors of papers and participants of the Conference IMJON-85, in their number our well known and highly esteemed specialists from abroad.

With the wishes of fruitfull proceedings and nice friendly atmosphere I am opening the International Scientific Conference IMJON-85.