

*Dear Colleagues and Readers,*

*I have good news and I want to share it with you! Our foundry journal “Prace Instytutu Odlewnictwa” will be published again! Put in a new graphic form and with the contents slightly changed, after many years of absence it returns to its Readers. We have decided to take the creative initiative and think of a rebirth of this publication, remembering the great popularity it once enjoyed, mainly due to the numerous efforts of our eminent scientists building up the foundry theory, and professionals – our friends and colleagues working hard for the foundry industry. There is in this undertaking a wish to pay a tribute to the long-lasting tradition, but there is also our strong will and determination to look for a new and most adequate place that this journal can have in a vast publishing area of our professional environment, full of the well-known periodicals, famous in Poland and abroad.*

*The quick pace of our modern times forces people to look for always better and more efficient means of communication and for an easy and possibly full access to the outcome of research and development studies, analytical and expert studies, or ordinary data published in a regular form or occasionally. This imperative, so typical of today’s civilisation, is true also in the case of our Foundry Research Institute. In restoration of our former publication we want to demonstrate in a most comprehensive way, closest to the reality and to the aim of our existence, what we are doing, what we can offer, what we can achieve, and what we intend to do in the future. We aim at creating a relatively well-ordered, chronological by intention, set of information describing our achievements in the research and development area, a sort of calendarium of the job-related activities, raised to a level of “professionalism” in full meaning of this word. It is our will and intention to enable our Readers to get a complete and multi-faceted idea about the development of the Institute, its mission and strategy, and its endeavours to successively match the theory with practice. This is the reason why we are planning to have, in parallel with the periodically published printed version of “Prace Instytutu Odlewnictwa”, also an e-edition, generally available on Internet, easy in access and distribution. In this way we try to face various challenges that the unusually rapid progress in information science and technology places in front of us, and among them the challenge of speeding up the pace at which the knowledge is created and rendered accessible to its users, not forgetting the quality that the publication should also offer to its Readers.*

*There is still another important reason, a powerful component of the executive power of our intentions. As the experience of the past few years teaches us, in a new embodiment the traditional manufacturing technologies, the art of metalcasting in particular, celebrate now their great come back. In its practical aspect, this trend expresses itself not only as an intensive, factual and forecast, growth in the volume of castings produced, and a renaissance of numerous cast materials and casting technologies, both old and new, but also as a strong inclination towards those cognitive fields of knowledge that are based on the synthesis of materials and fabrication of some specific, sublime – we might even say, products. Products of this type are characterised by an intricate geometry and a specific, set a priori, complex of properties. The ultimate goal is to make a product of near net shape, that is, ready for use immediately after having been made. The process applicable here is liquid phase metallurgy, often aided by other manufacturing*

techniques, like powder metallurgy, different methods of joining, or variations in plastic working. Therefore so much attention is paid to the skill of designing always better and more efficient means and tools that can help in forging the ideas and projects into real facts, assuming the form of multi-functional products fabricated by monotecnology in a flexible but single-step production cycle, serving strictly defined objectives. This type of the affirmation of reality, when referred to materials and products of different provenance, has been given the name of the philosophy of acting based on erudition, gathered under one common heading of the “knowledge based materials”. No wonder that in the activities of Foundry Research Institute has appeared an urgent need for strong, modern and efficiently managed forum to present recent achievements and exchange the knowledge and experience.

Therefore, being now on the verge of a practical embodiment of our intentions, we have set the following goals:

- to highlight the issues that can impact the technology and tighten the internal relations, especially with partners from the industry,
- to disseminate quickly and efficiently the outcome of research and development work in universities, high technical schools, research and development centres, foundries and industrial plants both at home and abroad,
- to highlight and promote the cooperation of Foundry Research Institute with partners at home and abroad, mainly through publication of joint research works,
- to collect and preserve in archives the outcome of studies carried out by the Institute for constant monitoring of progress, and to introduce changes and improvements.

“Prace Instytutu Odlewnictwa” will be published in Polish and English. The contents will comprise the results of investigations, analyses, expert works and theoretical studies done by the Authors of the articles with subjects covering a wide range of topics from both foundry science and the related fields of knowledge. This variety of topics discussed in the articles is the best illustration of a modern approach to the metalcasting technology, understood as a multi-disciplinary branch of research and studies, starting with the chemistry and physics of the solid and liquid body with an inherent touch of process thermodynamics and flow theory, through the fundamentals of metallurgical processes and multi-variant aspects of materials engineering, to end with the application of mathematical models in description of reality, with emphasis put on the simulation of crystallisation and solidification processes and the state of stresses, or general energy state of the shaped matter with the pertinent applied mechanics, the strength of materials in particular, in a range allowing for multi-dimensional spaces. The sphere of our interest will cover every level of the matter, from atomic, through nano-, mezo-, sub-, and micro-, to macro-level. With due attention and not forgetting for a moment even that the art of metalcasting, first and foremost, is of a utilitarian character, our journal “Prace Instytutu Odlewnictwa” opens its columns to all who are willing to publish their articles on the following subjects: the properties, and specifically the high-temperature characteristics, of liquid metals and alloys in contact with the solid state media, the choice of metals and ceramic materials for various applications, molten metal processing, mould and core making technology, optimising casting production parameters, designing and prototyping, different techniques of metalcasting and casting finishing treatment, market applications and genuine computer programs, the principles of mechanisation of the manufacturing processes, the fundamentals of organisation, production management and environmental protection, intelligent processes of forecasting and product fabrication, active planning and forecasting of foundry development, effectiveness of metalcasting processes, sectoral monitoring and standardisation. Of interest are also these achievements in science and research which in a complementary way correspond to the existence of “white spots” in problems close to the foundry theory and practice.

*All publications will be reviewed. To the Scientific Committee of "Prace Instytutu Odlewnictwa" we have invited the eminent scientists, recognised specialists from the field of foundry practice, materials engineering, and technology of machine construction and metallurgy, working in Poland and abroad. With satisfaction and pleasure we acknowledge the fact of having received numerous, very kind and inspiring, offers of participation in our joint project, which augurs well for the new publication and its main objective – to enrich with new ideas the knowledge and skills that our staff of research workers, engineers, technicians and foundrymen working in industry possess.*

*And with this message and deep faith in the usefulness of our initiative we hereby invite cordially our dear Authors and Readers to participation in the ambitious act of reactivation and development of our journal under the very promising and challenging, at the same time, heading of "Prace Instytutu Odlewnictwa", which means exposing the achievements of our Institute with every intention of serving the needs and expectations of the entire foundry sector with its noble cultural heritage and, by no means easy, challenges of the modern day.*

*Edditor-in-Chief*

*Jerzy Sobczak*

*Kraków, 6 December 2007*