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is outstanding considering environmental ("green" chemistry), as well as economic issues.
In this paper the bacterial leaching is discussed as a "green" technology in the light of metal recycling from complex secondary raw materials such as electronic waste. Discussion is illustrated by experimental results obtained in Bioprocessing Laboratory, University of Miskolc.

Industrial applications are increasingly formulating extreme criteria for aluminium alloys such as a combination of high strength and high toughness, furthermore, if the use requires it, it must be accompanied by good corrosion resistance, too. This is not an easy task to achieve these complex requirements using the traditional technologies. During our research work, Al5182 alloy important for automotive industry was investigated in terms of the technological sequence of operations that can be used to meet customer needs. Consequently, the effect of homogenization, industrial technologies, i.e. combination of the hot and cold rolling process, equal channel angular pressing (ECAP) and multiple forging (MF) of modern severe plastic deformations were studied in order to determine what favorable/desirable or undesirable properties are given to the alloy.

In a two-component equilibrium phase alloy systems, the conditions for unlimited solubility in the solid state are given by the Hume-Rothery rules. The four rules must be met simultaneously to form a solid solution with unlimited solibility. Only a very few systems able to fullify this criteria. In 2004 Cantor discovered by examining the phase relations of a multicomponent system, that a solid solution-like phase formed, consisting of at least five alloying elements in the same atomic percentage. A high value of mixing entropy alone is not sufficient to ensure the stability of such a solid solution phase. With the so-called free electron model or approximation, the limit of solubility in the solid state can also be interpreted in two-component systems. By applying Pauling's empirical correlation, we can also predict the stability of a solid solution in multicomponent and thus high entropy alloys. However, the free electron approximation also explains the change in conductivity of solid solutions depending on the nature of the alloying element.

Composite metal foams (CMFs) are increasingly used in automotive industry due to their relatively low weight and high energy absorbing capacity. During our research, bimodal composite metal foams (BCMFs) were produced, with ceramic hollow spheres (CHSs) as filler material. This ceramic is made of high-purity alumina (Al_2O_3). Two types of spheres were used with the nominal diameters of $Ø\ d_1 = 7$ mm and $Ø\ d_2 = 2.4$ mm. The hollow spheres of different sizes were used in different volume ratios: numerically 1:1, 2:1 and 4:1. After mixing uniform distribution was achieved. High-purity aluminium (Al99.5) was infused between the CHSs with low pressure infiltration to create a foam-like material. The manufacturing parameters have a significant influence on the success of the infiltration in metal matrix foams. Variant preheating temperatures, melt temperatures, infiltrating pressures and time were applied to achieve maximal infiltration. Samples were measured for density and their properties were evaluated based on macro and microscopic images.

The aim of the research is to develop a measurement method that can determine the degree of decarbonisation on the surface of heat-treated or even on finished parts, without any damage, with high reliability. Many times the decarbonisation is revealed only in the semi-finished or finished state when the surface of the component does not have the required parameters. In this case, a cut from the sample has to be used to verify the process, while the sample becomes waste. Centerless X-ray diffractometers have been developed primarily for non-destructive, residual stress testing. Also, we have, nationally unique, two such diffractometers, at the Institute of Physical Metallurgy, Metal Forming and Nanotechnology (FKNI) and in the 3D Laboratory. The basic idea of the present research is to determine and to use the characteristics of the interference function detected by the diffractometer, which goes far beyond the residual stress test. One such feature is the widening of the interference function,

Through centuries the metalworkers and metallurgists had to tackle with quite many challenging metal processing and surface finishing tasks ranging from manufacturing weapons to making precious metal jewelry. These days ancient metal products can still be found, for example, during road works as it happened near Nagylózs in Győr-Moson-Sopron county where a 6th century graveyard was explored recently with a rich gold, gilded and silver costume artifacts bringing up several metallurgical processing and surface cleaning and conservation queries.

Dr. Csirikusz József

1941–2020

Csirikusz József közkedvelt, népszerű tagja volt a hazai kohász társadalomnak, sok emléket, nyomot hagyott maga után.

1941-ben született Miskolcon. A hejőcsabai általános iskola után a jó nevű Földes Ferenc Gimnáziumban érettségizett. Kohómérnöki tanulmányait 1959-ben kezdte a miskolci Nehézipari Műszaki Egyetemen, az LKM ösztöndíjasaként. Az egyetemen hamar népszerű lett; vidám egyénisége, jó közösségi szelleme, segítőkészsége és nem utolsó sorban jó hangja kellemesebbé tette az egyetemi életet mindnyájunk számára. Szeretett és tudott is futballozni; ennek eredménye, hogy beceneve (alias neve) a kor egyik neves labdarúgója után Csernai lett.

1964-ben szerzett kohómérnöki oklevelet, majd az ösztöndíját biztosító vállalathoz, az LKM-hez került. Gyakorló mérnökként a régi Finomhengerműben kezdett, később az új Nemesacél Hengermű indulása után a Középsori Üzem vezetőjeként dolgozott, 350 dolgozó munkáját irányítva.

15 év után saját szavaival élve hűtlen lett a végzettségének megfelelő szakmai munkához: a meghívásnak eleget téve a vállalat Értékesítési Főosztály helyettes vezetője lett, majd megalakította a Marketing Irodát. Műszaki végzettségű kereskedővé vált, és saját bevallása szerint váltakozó sikerrel próbálta értékesíteni a vállalat termékeit. 1986-ban a budapesti Ferroglobus kereskedő vállalat csábításának eleget téve Budapestre költözött. Itt a Rúd-idom Főosztály divízióvezetője lett. 1987-ben műszaki egyetemi doktor címet szerzett.

1998-ban, a Ferroglobus privatizációját követően a Dunaferr Kereskedőházhoz került, 2002-ben, 61 éves korában nyugdíjas lett. Szakmai munkáját több