Editorial

There is little doubt that major breakthroughs in the form of better products and processes are being continually made on all frontiers of metallurgy/materials. These breakthroughs, such as advanced composite materials, superalloys, rapid solidification technology, and computer-aided manufacturing, have posed new challenges for the metallurgy/materials community. Most of these developments have occurred in the highly-industrialized countries of Europe, the Americas, and the Far East. But the need to stay informed about these advances has never been more critical for those of us in developing countries as well. It is important to note, then, that one of the ways information does trickle in is by way of articles contained in publications like ***Journal of Materials Engineering and Performance.***

It has become obvious that metallurgy is now, more than ever, interdisciplinary with other specializations in the broad spectrum of materials science and engineering. Examples of areas in which these interdisciplinary relationships exist are seen in the science and engineering of ceramics and polymers. To keep its membership on the leading edge of technology ASM International® has taken on an increasingly multidisciplinary dimension over time, and in 1984 began to focus on the whole of materials science and engineering rather than on just metallurgy alone. But in most countries in this region, metallurgy is still the predominant discipline of materials science and engineering, because ceramics and polymers have not yet made major inroads into the industrial fabric of these societies. This is largely due to the generally low level of industrialization to date. Until very recently, there were limited applications for these technologies. Today, however, there are indications of what may be a solid start toward full industrial development requiring utilization of the full spectrum of materials science and engineering—in new ceramic industries and parts manufacturing, and in the demand for quality rubber products and packaging materials.

Historically, metallurgical activities in developing countries like Zambia have usually been confined to the metal extraction industries. Consequently most metallurgists in this part of the world are employed just in these industries. In fact, since the inception of the Metallurgy and Mineral Processing Program at the University of Zambia in 1973, over 90% of the graduates have gone into the extraction business. This creates a self-perpetuating problem of major proportion facing universities in this region...even attracting students to study metallurgy at all! Quite often, prospective students ask, "If I am to study metallurgy, where else can I work, apart from the metal extraction industry?" By contrast, the diversity of industries which hire metallurgy graduates in developed countries—military, aerospace, automotive—is an inspriation to them. In consequence, I've observed that my students of physical metallurgy are also very keen on other subjects directly related to general materials science and engineering—mechanical testing, metallography, and heat treatment, among others—that provide knowledge they could take to jobs in a variety of industries if the opportunities were available here.

We now realize that the metal extraction industry—synonymous for us with metallurgy—is a "wasting asset"...that is, having a finite lifespan. It has brought us to the threshold of the 21st Century, but leaving much to be done to prepare us for entrance into the mainstream of science and technology. The growth of additional fundamental metallurgical industries utilizing ceramics and polymers, as well as metals, is required in order to bring us up to speed with current world market expectations. And technical literature—peer-reviewed archival journals such as the ***JMEP***—that bring us the latest advancements in materials science and engineering, are the keystone in our gateway to entering the competitive global marketplace and to preparing to offer what will be our own unique contributions.

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