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Editorial

Welcome, readers, to this first issue of *Advanced Performance Materials*. There are many journals available to the materials community, we intend to make this the one that you look forward to receiving most and gain most from reading.

We believe we will fill an important niche in reporting materials developments. The journal will not contain fundamental science papers, no matter how good. Neither will it be a trade journal. Rather it will concentrate on the critical area of the transitioning of good science to real world applications. Here "critical" is used in the sense of economic viability in our increasingly competitive world.

Repeatedly throughout this, and future, issues of the journal you will see an emphasis on the processing/synthesis of materials—for without innovative creative processing/synthesis we cannot achieve advance performance materials.

It has been stated that the three most important industries in driving technological change, national security considerations, and economic advances into the next century are information/communications systems (computers), biotechnology, and advanced materials and syntheses/processes. Further, of those three, advanced materials and syntheses/processes are the most critical and considered vital to advancements in the other two fields, hence the major emphasis being given to advanced materials and the synthesis and processing of these materials in many parts of the world.

What are advance materials? Advanced materials may be defined as materials which have enhanced mechanical and physical characteristics compared to traditional materials, such as aluminum and steel, currently manufactured in large-volume assembly line type facilities. The characteristics either allow for very significant improvements in product or device performance of, even greater significance, allow for new technologies that are not achievable using conventional materials. The advanced synthesis and/or processing techniques are those methods used to produce these advanced materials.

You will also see all kinds of materials addressed in the journal—metals, ceramics, polymerics, composites, electronic materials etc. And you will see, wherever possible, a multi-disciplinary approach to the papers. We hope that reading about progress in materials fields other than your own will spark ideas for your particular materials area of interest.

We plan four basic types of papers for the journal: broad-overviews of a particular science/technology area, examples in the present issue are those by Victor Greenhut on "Structured Ceramics," by Patrick Taylor and Shahid Pirzada on "Plasma Processing," and Benson Dexter's and Donald Baker's article on a comprehensive study of how well polymeric composites stand up under service conditions. Other articles will address the research water-front being covered in a specific country or organization. An example is the paper by Eberhardt Seitz on the advanced materials program in Germany. Although not represented in the current issue are also planned papers on specific materials, for example on Intermetallics by Michael Dahms in a forthcoming issue, and we will devote whole

issues to the work at specific organizations—for example an upcoming issue will be totally devoted to the materials work being conducted at the All Russian Institute for Light Alloys (VILS) in Moscow, Russia and a subsequent issue to the program at the Beijing Institute for Aeronautical Materials (BIAM), People's Republic of China.

I cannot finish this first editorial without raising one more point—COST. In the past with military dominated advanced materials research and development, particularly in the USA, performance was the over-riding driver with cost a secondary consideration. And we all remember the $500 hammer and $800 toilet seat. Things are different now. Affordability is the name of the game with programs such as the Clinton Administration's "dual use" program leading the way. So you will see a number of articles in the journal demonstrating how attention to detail "total quality control" can make a process which seems too expensive to one organization become a production process to another group. More anon.

I hope I have given you a flavor for what we hope to achieve in *Advanced Performance Materials*. I intend that the journal will provide interesting papers of general interest; and papers which help decision makers to decide where to invest increasingly scarce funds for research and development. Let me know whether we are achieving these goals.

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