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Editorial

The *Journal of Phase Equilibria and Diffusion* (*JPED*) developed as a result of the Alloy Phase Diagram program with the latter being initiated as a joint effort of the American Society for Metals and the then Bureau of Standards. Related programs were undertaken by the American Ceramic Society and the Indian Institute of Metals. Experts from around the world became contributors and the project was internationalized. The accumulated data were disseminated in a variety of ways that have now converged to the present *Journal of Phase Equilibria and Diffusion* (*JPED*). On that basis, it can be concluded that the vast majority of our readers have interests in what in the present day is called ''materials science and engineering.'' This field deals with materials whose behavior and properties are ultimately based upon the interactions among the atoms.

In contrast, organic materials do have atomistic interactions within individual molecules, but the properties and behavior of an organic material are largely dependent upon the interactions among its molecules. As an example of the stark difference between atomic interactions and molecular interactions, one can consider the primary bonding interactions. In an atomic array, the coulombic interaction energy between the time average charge at point x and the time average charge at point y is inversely proportional to the distance between x and y. In molecules, the bonding interactions between molecules originate largely from van der Waal's interactions. These involve dipole-dipole, dipole-quadrapole, quadrapole-quadrapole, etc., interactions with the attendant energy being proportional to an infinite series whose first term is r^{-6}, second term is r^{-8}, etc., where r is the distance of separation. Thus, it is not surprising to find that organic materials are generally low melting with melting above 200-300 °C being quite uncommon. In contrast, atom to atom bonded materials which melt below room temperature are relatively rare. Furthermore, many molecular species can only be formed through complex chemical reactions and a Calphad type of calculation relating the stability with respect to the elemental components could not predict the correct phase. For instance, what would a Calphad calculation predict for the equilibrium between elemental hydrogen and carbon at equiatomic stoichiometry? Would it be acetylene, C_2H_2, benzene, C_6H_6, or something else? I haven't made such a calculation but the problem of applying techniques familiar to the materials scientist to organic materials is obvious. Other examples of significant differences between materials of industrial interest and those of organic interest could be cited, but the point is that organics are important for many uses but not for many of the applications currently of interest to a materials scientist or engineer, i.e., our readership.

ASM's Alloy Phase Diagram Committee monitors the publication of the *Journal of Phase Equilibria and Diffusion* and defines the nature of the material to be published. This committee met in Pittsburgh in the fall of 2009 and considered the increasing number of papers that were being submitted to *JPED* that were concerned with organic equilibria. The committee considered the points indicated above and recommended that most papers which are of primary interest to an organic chemist or a biochemist be declined for publication in *JPED.* Exceptions can, of course, be made in specific instances. Examples are cases wherein the organic data in a paper may be used for separation or enrichment in the extractive industries, for application of new experimental techniques to atomistic materials, for the development of new insights of a fundamental nature, etc. In short, it is recommended to consider for publication only those submissions which have some relevance to the broad spectrum of materials of interest to the so-called ''materials man,'' and it is to be emphasized that this proposal is not meant to denigrate the importance of organic chemistry but rather to recognize that no single technical journal can be all things to all disciplines.

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Editor
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