

Accelerating Materials Innovation and Implementation: What Strategies can be Developed?

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The major advances in human technology throughout history have often been marked by, and indeed identified by, materials innovations. From the stone and iron ages through the silicon age, we are now entering the age of integrated materials, where the ambition is now to find new functionality in material's through intentional and rational design of complex structures. Considering that many past advances can be attributed to serendipity, the question is what strategies and research techniques can be reliably employed to accelerate materials innovation and to accelerate the implementation of those innovations into the market place. There is no general, nor simple, answer at the moment, but there are lessons to be learned from recent cases. This presentation focuses on several recent R&D experiences involving nanotechnology where the pace of research was notably influenced by a combination of computational and heuristic modeling that aided in critical decisions. In addition, this presentation also covers recent thinking as to what investments and services can be provided at the institution level to encourage new materials innovation. Many of examples are based upon what is taking place at Arizona State University,