Foreword

When Congress passed and the President signed the 21st Century Nanotechnology Research and Development Act, or Public Law 108-153, in December 2003, our goal was to help spur and coordinate research and technology development in this exciting and promising area, one that has the potential to transform every aspect of our lives. By manipulating matter at a molecular scale, nanotechnology may allow us to develop new materials and devices that have unique properties beyond the realm of current conventional technology. Its potential economic effects are also profound, as some have estimated that its impact on both existing and new industries may easily exceed tens of billions of dollars by the end of this decade, and a trillion dollars not too many years beyond. Applications ranging from novel and highly targeted therapeutic treatments for diseases including cancer to such timely concerns as increased energy efficiency or tools for providing a cleaner environment certainly emphasize the potentially transformational nature of nanotechnology.

While many potential applications are some years ahead of us, the increasing frequency with which articles on nanotechnology are appearing in trade publications, investment publications, and in the mainstream media tell us that the science is already moving beyond the laboratory. Yet as we move ahead with the development of this frontier technology, it is important that we also pay attention to the issues beyond fundamental science and discovery that are equally important—issues such as technology innovation and technology transfer. And it is not just economic issues that need to be considered. As with any new technology, we need to pay careful attention to minimizing any potential impact on the environment as we move ahead. As the chapters in this book indicate, while much work lies ahead, we are making exciting progress in each of these areas.

Senator Joe Lieberman
Senator George Allen
Washington, D.C., November 2005