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Introduction to the section “Nanotechnology Policy”

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This special section is the result of a call for papers sponsored by the Technology Forecasting and Social change. It combined efforts from The University of New Mexico’s Anderson School of Management, The Mesa+ institute and the Nikos Center of Knowledge Based Entrepreneurship at the University of Twente and Sandia National Laboratories. The section is comprised of seven papers which focus on many differing elements of *National and Regional Nanotechnology Policy*. The initial paper examines national and regional nanotechnology policy differences between developed and developing countries. The second effort reviews follow on effort of a national initiative. The third work reviews nanotechnology patenting on a country basis giving one indication of the effectiveness of a countries national policy. The authors of the fourth paper focus on de-facto regional cluster as a policy for nanotechnology firms. The fifth piece sheds light on an early aspect of national policy which is the initiation of national centers of excellence and the sixth paper provides a regional disruptive technology forecasting model for policymakers built on nanotechnology and small technology data.. Finally the last paper is provided by a US national research group demonstrating the use of technology intelligence and text mining in assisting national nanotechnology tactical and policy formation.

The papers in this section provide advances in the state of the art, as well as a review of current knowledge in nanotechnology policy based and are based on previous relevant research. Major contributions to the field are offered through an integration of disruptive technology, technology intelligence, economic development literature, technology forecasting techniques and knowledge based entrepreneurial efforts. We offer papers that must embrace multiple conceptual schemes, address the

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nuances in the more traditional entrepreneurial and policy literature, combine that knowledge with the expanding definition of the management of technology field and identify the central strategic reality that the multifaceted nature of any technology plays in the national, regional and firm based policy processes.

It has been a pleasure for us to work with such a distinguished and dedicated group of authors. The combined work of these authors and the diligence of our anonymous reviewers are a credit to the quality of the special section.

We initiate the section with a practitioner led effort entitled “An Introduction to Nanotechnology Policy: Its Varying Opportunity and Constraints for Emerging and Established Economies.” The article is by Dr. Romig Vice president of Sandia National Laboratories and Dr. C.N.R. Rao special advisor to the government of India on Nanotechnology Policy. It features Dr. Bruce Kirchoff one of the leaders in small firm policy in the US and former chief economist for the Small Business Administration. Dr. Kees Eijkel, Head of the Mesa+ Institute for Nanotechnology in the Netherlands, Doctors Arnold Baker, Justine Johannes and Tom Zipperian of Sandia National Laboratories, Dr. H.S. Mani, the Lifetime Achievement in Physics Award winner from India and Dr. Steven Walsh. This paper focuses on the promise of nanotechnology as an economic engine that can redefine the wellbeing of regions and nations and how this process differs between regions in developed economies and how these differences are even more striking than those efforts in developing countries.

The second article in our series is from two Canadian researchers Dr. M Minna Allarakhia and Anthony Wensley entitled “Systems Biology: A Disruptive Biopharmaceutical Research Paradigm.” This work focuses on the results of the human genome project and the evolution of a national initiative. It advances the concept of systems biology at the human and molecular level. A knowledge framework is used in this paper for conceptualizing and enabling the efficient management of these new complexities in systems biology.

The third paper in our series is from Doctors Alencar, Porter, Antunes, is “Nanopatenting Patterns in Relation to Product Life Cycle.” This paper shows one way of comparing national nanotechnology initiatives. These authors compare the positions of national nanotechnology development efforts based on analyses of patenting from 1994 to 2005. This work provides some empirical information on the efficacy of differing nanotechnology government efforts and policies around the world.

The fourth paper focuses Biotechnology and Bionano clustering as De facto regional policy in creating firm based success. Marina van Geenhuizen and Leo Reyes–Gonzalez present a rich empirical effort in “Does a Clustered Location Matter for High-technology Companies’ Performance? The Case of Biotechnology in the Netherlands.” The offering provides a focused look at one of the world’s hotspots in nanotechnology the Netherlands and regions within that country.

The fifth paper led by Dr. Kautt and Bittner of FZK Germany looks at a normative element of national nanotechnology policy the formation of national centers of excellence. Their effort entitled: “Global Distribution of Micro-Nano Technology and Fabrication Centers: A Portfolio Analysis Approach,” is the first effort of its kind and provides the first results of many countries enacted nanotechnology policy. They provide a review the variety of forms and define the nature of many the major Micro and Nano Technology Centers from around the world by describing some of their similarities and differences.

The sixth paper is by Dr. Sul Kassiech and Nabeel Rahal and is entitled; “A Model for Disruptive Technology Forecasting in Strategic Regional Economic Development.” The authors of this paper focus on small technologies especially nanotechnology as disruptive technology engines that form the basis for long term economic development. They provide mathematical based forecasting models to assist policymakers in the disruptive technology based economic development process.

The seventh and final paper is “Global Nanotechnology Research Literature Overview”. It is by Doctors Kostoff and Koytcheff of the Office of Naval Research and Dr. Lau from the Institute for Defense Analyses. The authors use text mining to extract technical intelligence from the open source global nanotechnology and nanoscience research literature. They highlight the national policy value of such a resource for policymakers.

It has been a pleasure for the special section editors to work on this very important subject. It seems that we continue to find brilliance and dedication in the efforts that Dr. Hal Linstone provided for this special section. We cannot thank him enough for his valuable guidance and counsel.