



## FIRST INTERNATIONAL NANOTECHNOLOGY CONFERENCE ON COMMUNICATION AND COOPERATION

### **Abstract**

#### **Nanotechnology in the Chemical Industry: Potential Value and R&D Status**

Nanomaterials roadmap has been written<sup>1</sup> and has been widely reviewed. An economic analysis of nanotechnology applications in several markets has shown that very large value can be created if specific nanomaterials can be created and manufactured cost effectively. For example more selective catalysts for the chemical industry could save \$4 billion/year and 90 trillion BTU/year, and selective catalysts for the refining industry could save as much as \$1.7 billion/year and 120 trillion BTU/year and for the trucking industry could save as much as \$2 billion/year and 300 trillion BTU/year. In this paper we will report estimates of savings due to designed nanomaterials for several industries including auto, maritime, manufacturing as well as chemicals, refining and trucking.

A panel of Chemical Industry and National Lab R&D experts has analyzed the specific R&D needs for Nanomaterials by Design. Several specific programs which should be funded in the near term have been identified. These programs can be divided into four categories i.e. Fundamentals and Understanding, Modeling and Simulation, Manufacturing and Processing and Characterization Tools. This paper will discuss these programs and propose a R&D strategy to achieve the commercial capability for nanomaterials by design.

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<sup>1</sup> Chemical Industry R&D Roadmap for Nanomaterials by Design: From Fundamentals to Function