Overview of commercial nanomaterial products and the common thread of compatibility

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Consumer Product Indexes (CPI) that relate to products incorporating at least one nanomaterial have been developed by several countries including the United States, Japan and Germany. From these indexes we find about 2000 consumer products listed from 32 countries. These products can be grouped into five major categories based on composition: metals, carbonaceous, silicon, other, not revealed. The "not revealed" category comprises nearly 50% of the products, metals about 35%, and carbonaceous, silicon and other all garner about 5% each. The types of organizations that are conducting research and/or commercialization of nanomaterials can be grouped into 5 major categories: industry, non-governmental, research center, governmental and university. Although we might expect industry to perceive lucrative advantages from developing and promoting nano-based products, it is interesting to see that they are found to be at the bottom of the list, garnering a mere 4%, whereas university involvement is 12 times greater at 50%. Combined government and university involvement amount to 75%. A major challenge in all areas of product development is compatibility between components and with the end use environments. Developing products that incorporate nanomaterials presents an even greater challenge in compatibility issues due to either the high reactivity brought about by the high surface area of nanomaterials, or by almost complete incompatibility with nearly all other substances. As we strive to produce more commercial products based on nanomaterials, perhaps we should be questioning why industry involvement is drastically lower than either academic or government entities, and if a model can be found that enables a more efficient route form lab to commercial products.

Speaker Biography

David Strawser brings to the conference a wealth of chemical and technology experience in a wide variety of industries and academic settings that include nanomaterials, pharmaceutical and health care, conductive polymers, electronics, waste water treatment and detergents. In addition, to research projects with nanomaterials, he has both worked with and headed teams that have taken materials from the laboratory R&D stage through commercial production. His unusual ability to understand technology and applications in unrelated fields has been demonstrated in patents, commercial products and processes. He currently focuses on the challenges of developing methods to functionalize nanomaterials in order to tune compatibility with other materials in order to maximize the contribution that the nanomaterials make to the formulation properties.

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