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## **NANOTECHNOLOGY'S IMPACT ON PRODUCTS: CANCER TREATMENT GETS REINVENTED, AUTOMOBILES GET INCREMENTALLY IMPROVED**

Case studies in Lux Research report quantify who will capture value from nanotech in consumer products

New York, NY – March 29, 2005 – Who will win and lose as nanotechnology pervades consumer goods? The answer will differ greatly by industry and product category, according to a new report from Lux Research entitled “How Nanotechnology Adds Value to Products.” Nanotech could slash the cost of breast cancer treatment by 39% and add an average of seven years to patients lives, reinventing the field – but in another sector like automotive, nanotech innovations will add a series of small, incremental innovations from which component suppliers benefit the most.

“First-generation consumer products incorporating nanotechnology are already on the market,” said Matthew Nordan, Vice President of Research at Lux Research. “They show price premiums of 11%, on average, over conventional products. For example, Easton Sports’ Synergy SL hockey stick is built from a carbon nanotube composite, and Wyeth’s Rapamune immunosuppressant tablets are milled into nanocrystalline grains. But these products form a poor guide to the future. Second-generation nano-enabled products will differ by tapping many nanotechnology innovations instead of just one, employing active nanostructures, and requiring new manufacturing processes to exploit.”

To calculate the value that will be created and destroyed by nanotechnology in second-generation products, Lux Research built detailed, quantitative case studies of 1) a high-volume consumer truck, 2) a high-end 3G mobile phone, and 3) the course of treatment for breast cancer. For each, Lux Research identified a shortlist of nanotech innovations likely to have the greatest impact in a five- to 10-year time frame and quantified how much value would be created and destroyed if the innovations were deployed in volume – as well as who would capture the net value created.

Based on the case studies, the report finds that:

- Nanotech’s impact on a consumer truck is broad but shallow, with many minor advances. If six emerging nanotech innovations were all applied in one model year of a high-volume truck like the Ford F-Series, tier-one suppliers to the auto manufacturer would win the most, with \$493 million in incremental revenue for that model year. Consumers would rank next with \$327 million in cost savings over five years of use, mostly from better fuel economy, as well as soft benefits in performance and safety. The truck manufacturer itself would follow with a net \$248 million in cost savings and boosted resale value, plus points of differentiation against competitors. But incumbent suppliers of materials like talc-filled composites and microparticulate platinum group catalysts would lose \$297 million in combined sales displaced by nanoscale alternatives.
- The mobile phone case is narrower but deeper, where nanotech will sustain existing price/performance curves. The biggest winner from nanotech in one model of a high-end 3G mobile phone would be the manufacturer, which could use five emerging nanotech innovations to gain crucial market share and keep giving consumers more for their money every year. New suppliers would earn \$355 million from nano-enabled components like OLEDs and single-chip memory solutions, at the expense of \$251 million in lost sales by incumbent suppliers.
- Breast cancer treatment sees a revolutionary, narrow-but-deep impact from nanotech. If four emerging nanotechnology innovations were universally applied to breast cancer treatment, patients would win the biggest with seven years of life added on average – a gain impossible to quantify in dollars. Fifteen-year treatment costs for one year’s worth of diagnosed patients would drop by \$4 billion – a savings of 39% – and entirely new franchises would be created in new nanoscale screening tools that replace mammography, nano-enabled MRI contrast agents that replace biopsies, nanoparticulate ablation procedures that replace lumpectomy and mastectomy, and nano-reformulations of existing chemotherapy agents. Incumbent suppliers would lose: for example, entire classes of chemotherapy agents, worth billions of dollars in annual revenue, would be displaced.

“The rise of nanotechnology in consumer products will spur action from start-ups and large corporations alike,” said Nordan. “Start-ups should pay attention to their partners’ and customers’ soft branding issues as well as hard business case concerns: Although few consumers are likely to use a nano-enabled solar cell recharger packaged with their mobile phone, Konarka could sell millions of such rechargers to Nokia anyway if they provided a means to differentiate against competitors’ phones. Corporations should consider ‘blocking acquisitions’ that allow them to gate the introduction of nanotech enablers rather than letting competitors set the pace, in the same way that they pursue ‘blocking patents’ in nanotech today.”

The report’s case studies identify 43 nanotech innovations across the three product categories studied, and quantify the impact of 15 key innovations in terms of net value captured by suppliers, manufacturers, customers, and other parties in the products’ value chains. The report is available immediately to clients of Lux Research’s Nanotechnology Strategies advisory service. Clients can also access the Lux Research team to drill down on specific aspects of the cases, as well as to apply the same case study process to other product categories. For information on how to become a client, contact Rob Burns, Vice President of Sales, at (646) 723-0708.

**About Lux Research:**

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