

Nanotechnology and Diffusion of Innovation: Security Challenges for the 21st Century

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The pursuit of the minutely small – nanotechnology – is thriving in academia, in the private sector, and in global state science and technology programs. At the same time national security and intelligence communities are increasingly concerned with the emerging profile of a 21st century terrorist and insurgent who is young, educated, technically-skilled, and connected electronically. For scholars of international security, the intersection of science and technology with armed conflicts and military capabilities is a long-standing area of inquiry and are prominent factors in strategic choices, balance of power, deterrence postures, nonproliferation regimes, security doctrines, and programmatic choices. Advances in nanotechnology have and are anticipated to further marry the successful characteristics of availability, affordability, mobility, lethality, and durability that drove the proliferation of conventional weapons like the AK-47. How will the global expansion in nanotechnology affect the material instability, complexity, and burden of knowledge associated with acquisition and use of unconventional weapons, like biological and chemical agents, by state- and non-state actors? This talk will explore and probe specific characteristics and operationalizing factors

– *technical and non-technical* – that may have decisive impact on the adoption of new technologies by non-state actors. The goal of this work is not to predict new specific technologies but to develop a robust analytical framework for assessing the impact of new technology on national security and identifying measures to prevent or slow proliferation of new technologies for malevolent intentions. Understanding the changing paradigms and limiting the proliferation of unconventional weapons for the 21st Century starts with an awareness of the factors driving the capabilities, analysis of the changing nature of technological progress, the nature of warfare, and the relationship between science and international security. Working at the intersection of strategy, technology, and governance, this talk explores the need to and explores understanding of the complex and interdependent relationships among science, technology, and security – politics, cultures, organizations, institutions, and individuals -- in order to explain how these phenomena intersect and potentially impact US and international security policies.