Nanotechnology Applications in Development of Highly Efficient Machining Tools

**MATERIALS**
- **High-speed Steels**
  - Russia: 16% | World: 11%
- **Die Steels**
  - Russia: 2% | World: 2%
- **Hard Alloys**
  - Russia: 50% | World: 50%
- **Cutting Ceramic Materials**
  - Russia: 1% | World: 9%
- **Polycrystalline Diamonds (PCD)**
  - Russia: 6% | World: 6%
- **Cubic Boron Nitride (CBN)**
  - Russia: 6% | World: 6%
- **Abrasive Materials**
  - Russia: 17% | World: 10%
- **Electrode Materials**
  - Russia: 9% | World: 6%

**ENGINEERING PROBLEMS AND SOLUTIONS**

**PRODUCTS**

**MARKETS, USD mln.**

**DEFENSE INDUSTRY**
- Consumption: 80.5
- Market Pfizer: 3.9

**AUTOMOBILE INDUSTRY**
- Consumption: 47.0
- Market Pfizer: 2.8

**AEROSPACE INDUSTRY**
- Consumption: 64.0
- Market Pfizer: 5.0

**HEAVY AND POWER ENGINEERING INDUSTRIES (INCLUDING METALURGY)**

**RAILWAY ENGINEERING AND SHIPBUILDING INDUSTRIES**

**PETROLEUM INDUSTRY**

**ELECTRICAL ENGINEERING AND ELECTRONIC INDUSTRY**

**WOOD PROCESSING INDUSTRY**

**OTHERS**

**RISKS AND LIMITATIONS**
- Lack of free financial resources
- Lack of modern equipment
- Lack of skilled personnel
- Technology gap between Russian and international manufacturers
- Unable to overcome the challenges of major international competitors
- Strong competition from foreign manufacturers