High Power Accelerators for Waste Transmutation and Energy Conversion - Technologies and the Industrial Viewpoint, C. MILEIKOWSKY, Royal Institute of Technology, Stockholm - High power accelerators, in combination with subcritical blankets, may in the future become at least as important to the energy needs of humanity as critical nuclear reactors today. How is that? The plutonium contained in the spent civilian reactor fuel in the world today is already sufficient to make about 300,000 nuclear bombs, each equivalent to 10% to 70% of the Hiroshima bomb. If this plutonium is not burned, it will need safeguards for about 100,000 years. And under current plans it will not be completely burned: some countries (France, England, Russia, Japan) plan to burn about half and deposit the rest, while others (such as USA and Sweden) plan to put the waste untreated in depository. With accelerator-driven subcritical blankets, all the plutonium can be burned and the most health-threatening long-lived isotopes transmuted to non-dangerous stable isotopes. The burning is financed by the electricity produced - extremely safely - during the subcritical process. This new generation of nuclear power could not only be more acceptable than the current generation of reactors but furthermore increasingly replace fossil power, thus significantly reducing the risk of global warming. Accelerators could be either linacs (existing technology) or cyclotrons (which still need some development).