



# Thorium fuel - a safe and cleaner source of nuclear energy

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**ABSTRACT:**

The massive use of fossil fuels is leading to greenhouse induced global warming with a high probability of major damage to the global environment and the world economy. There is an urgent need for new ways of electric power production free of greenhouse gases. At present nuclear energy is the only established option for base load power generation without carbon dioxide emission. However, use of uranium fuel in nuclear power plants is controversial and suffers from many disadvantages. A thorium burning Accelerator Driven Subcritical Nuclear Reactor (ADS NR) avoids many of these problems. The reactors cannot melt-down, there is minimal production of long lived waste, diversion to military use is very difficult, reserves of thorium are almost inexhaustible and costs are expected to be lower than for uranium fuelled reactors. Additionally it can also be used as a radioactive waste incinerator. If an ADS NR is fuelled with fissile material, bred from abundant natural thorium it can provide the world with an almost unlimited amount of clean and cheap energy. The known thorium reserves of Australia is 300,000 tones. If this thorium is used as nuclear fuel it can provide Australia's electricity needs for about 10,000 years at today's consumption rate.

**SPEAKER PROFILE:**

Dr Reza Hashemi-Nezhad completed his PhD at the University of Birmingham in the UK. Currently he is the leader of the Applied Nuclear Science group in the School of Physics, at the University of Sydney where he is an Associate Professor. Dr Hashemi-Nezhad's research work includes areas such as neutron detectors and dosimetry, nuclear waste transmutation and incineration, Thorium fuel cycle and Accelerator Driven Sub-Critical Reactors. He collaborates with scientists from Germany, Russia, Poland, Czech Republic, Ukraine, Greece, China and India. Dr Reza Hashemi-Nezhad has published more than 60 papers on accelerator driven subcritical nuclear reactors in international journals and conference proceedings. Recently he was elected President of the International Nuclear Track Society (INTS).

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**ALL WELCOME**