

# Nikola Tesla Scholarship

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All payments should be identifiable i.e. we will need a name and address (and email or phone number would be nice), so tax invoices can be issued.

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**Early life.** Nikola Tesla was born July 10, 1856 in Smiljan, Vojna Krajina border province of former Austria. His father was a Serbian Orthodox priest, gifted writer and poet, and his mother, in his own words, was “an inventor of the first order”. Tesla inherited a fortunate blend of his parents' best talents: he was highly intelligent, but a poetic dreamer, altruistic, and from an early age strongly self-disciplined with desire for invention.

After obtaining separate degrees in Physics, Mathematics, Mechanical and Electrical Engineering in Graz and Graduate Studies in Physics in Prague in 1880, Tesla worked in Hungary, Germany and France. In 1882 he conceived of the principle of the rotating magnetic field and polyphase system of alternating current that would change the world.

**Alternating Current (AC).** Unable to interest investors in Europe in his polyphase system, Tesla migrated to America in 1884 to redesign machines designed by Edison, who at the time was working on a Direct Current (DC) electrical power system. Convinced of the advantages of an AC system and the drawbacks of a DC system, Tesla went his own way. In 1888 he gave the first of his spectacular lecture-demonstrations of AC power and obtained US patents covering an entire system of polyphase AC that remains unchanged in principle today.

**Modern Electric Power System.** With the financial backing by George Westinghouse who bought the patents to Tesla's AC generators, transformers and motors in 1888, the AC polyphase system was proven superior when used to light up the World's Columbian Exposition in Chicago in 1893, together with Tesla's invention of neon and fluorescent lights. It was thus chosen for the Niagara Falls power plant, the prototype for all future commercial power systems. The harnessing of Niagara in 1895 gave birth to commercially viable electrical power systems which would supply industrial and domestic electricity and which have powered the world, as we know it, for over 100 years.

**Tesla Coil.** In 1890, in his own laboratory in New York, Tesla patented an air-core high-frequency resonant transformer, known as 'Tesla Coil', which provides a means to easily generate and study high frequency and high voltage currents.

**New Concepts and Innovations.** In a series of lectures between 1891 and 1893, Tesla demonstrated the principle of electrical tuning, resonance and impedance, methods of generating high-frequency induction heating, induction motor, and a high sensitivity electronic tube, the forerunner of the electronic vacuum tube or valve. These innovations undoubtedly make him more than any other single person, the father of the modern electronic age.

**Radio and Remote Radio Control.** Tesla was the first to develop many fundamental inventions necessary to radio, including RF oscillator, earthing of the aerial, principles of electrical tuning, understanding of resonance and impedance and generation of high frequencies. Many of his discoveries were later used by other co-developers of radio. Tesla's fundamental contributions to the development of radio communications were recognized in a US Supreme Court ruling that posthumously upheld Tesla's original patents for the invention of radio.

In 1898 Tesla performed the very first demonstration of wireless communication by navigating the teleguided boat before a crowd in Madison Square Garden. This radio-controlled boat equipped with radio transmitting and receiving circuit is the predecessor of remote control and remote sensing.

**Colorado Springs: experiments with high-voltage and high frequency currents.** In his laboratory in Colorado Springs, Tesla carries out spectacular experiments. He staged the first demonstration of a wireless power transmission by lighting up 200 lamps without wires from a distance of 40 kilometers and creating artificial lightning that produced discharges measuring 41 meters. His research was aimed at investigation of electromagnetic wave propagation through the atmosphere and the earth, development of high power transmitters, receivers, antennae and modulators to realise his dream of universal radio telecommunication. During his work at Colorado Springs Tesla made what he regarded his single most important discovery: terrestrial stationary waves, which he saw as having the potential of enabling wireless transmission of electrical power and communication.

**Free Electricity.** Upon returning to New York in 1900, Tesla the visionary began the construction of a gigantic tower and power plant on Long Island to demonstrate the results of his Colorado Springs discoveries. His plan was to develop worldwide wireless communication, broadcasting and wireless picture, as well as information transmission and wireless transmission of electrical power. The project ran into controversy, financial backing collapsed and Tesla was forced to abandon the endeavour.

**Later Years.** Tesla continued his research in many areas. In 1917 he suggested how high frequency short wave impulses could be used to detect remote objects, anticipating radar by decades. He described cosmic rays 20 years before other scientists discovered their existence. He also contributed to the development of high speed (bladeless) turbines with smooth rotary discs.

Never concerned with wealth, Nikola Tesla spent his last years in genteel poverty, living on a small pension from the then Yugoslav government in a New York hotel, where he died on January 7, 1943. Most of his notes, calculations and letters are housed in the Nikola Tesla Museum in Belgrade, Serbia.

# Support engineering and science students!

## ***An invitation for donations for Nikola Tesla Scholarship***

- Tesla Forum invites you to be a sponsor for the Nikola Tesla Scholarship for postgraduate students at The University of Western Australia.
- One Scholarship will be awarded annually to students of exceptional research potential undertaking a higher degree by research in the areas related to Tesla's work such as Engineering, Science, Physics etc.
- The scholarship is anticipated to be in the amount of \$5,000 per annum.
- The duration of each scholarship is for one or two years, depending on the discipline.
- Tenable at The University of Western Australia.

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4. **FUTURE BENEFITS** - Outstanding Students from Australia and around the world are attracted to aspire to this scholarship which will enable them to complete their post graduate studies at the University of Western Australia. This is giving our sponsors a unique opportunity to source the very highest calibre students for potential future employment.

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