

Nobel Laureate's Special Lecture: **Economical profit of establishing a renewable energy based society 1**



Prof. Hiroshi Amano

(Department of Electrical Engineering)

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13:00-15:00 (Japan Standard Time UTC+9)

Synchronous Lecture on Zoom

Professor Hiroshi Amano of Nagoya University is a materials scientist who was awarded the 2014 Nobel Prize in Physics for inventing blue light-emitting diodes (LEDs). Join Professor Amano in a special lecture about how we could establish a carbon neutral society by using new electronics and renewable energy.

Open to all students from APRU member universities (Undergraduate students only)

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In October 2020, Yoshihide Suga, Prime Minister of Japan, declared the establishment of a carbon neutral society by 2050. Before this declaration, we had already been considering for five years the realization of a carbon neutral society through the use of new semiconductor-based systems. Our strategy is based on the idea put forth by Professor Yoichi Kaya. According to Professor Kaya, total greenhouse gas emission can be calculated using the following equation;

$$F=P \cdot (G/P) \cdot (E/G) \cdot (F/E)$$

- F: global CO₂ emissions from human sources
- P: global population
- G: world GDP
- E: global energy consumption
- G/P: GDP per capita
- E/G: energy intensity of the GDP
- F/E: carbon footprint of energy

By 2050, the total population in Japan (P) is expected to be reduced to 3/4 of the current population, while the productivity (G/P) should be increased about 50%. Thus, if the energy intensity of the GDP (E/G) and carbon footprint of energy (F/E) can be reduced to 35% and 10%, respectively, we can reduce the total CO₂ emission (F) to 4%, which is almost the same as the total CO₂ absorption by forests or plants life in Japan. Then, we can realize a carbon neutral society. I will explain why renewal energy based system is beneficial for the countries like Japan. I will also discuss how to realize carbon neutral society by new electronics.