A Report on Thermal Power generation , coal mining method, coal purification and its purification at Dulanga Coal Mines, NTPC Ltd., Sundargarh.

The primary objective of the internship project was to gain practical insights into the processes involved in coal mining, preparation and purification, focusing on the chemical aspects. The students also aimed to understand the methodologies used for sampling and analysis of coal, essential for ensuring the quality and efficiency of thermal power generation.

Visit Overview:

During the visit to the NTPC, Ltd. on dated.07.04.2018 to 13.04.2018, the students had the privilege of delving into the following key areas:

a. **Coal Mining Methods:** The students were provided with a comprehensive overview of the coal mining techniques employed, including surface mining and underground mining. They learned about the excavation processes and safety protocols associated with coal mining operations.

b. **Coal Preparation and Purification:** The visit included a detailed explanation of coal preparation methods, where raw coal is cleaned, crushed and separated into different size fractions. The students also gained insights into purification techniques to remove impurities, ensuring the coal's suitability for combustion.

c. **Sampling and Analysis Methods:** The students were introduced to the critical processes of coal sampling, which is essential for representative analysis. Various sampling techniques, including mechanical sampling and manual sampling, were demonstrated. Additionally, the students learned about analytical methods such as proximate analysis, ultimate analysis and calorific value determination, which are vital for assessing coal quality.

Key Learnings

Through the internship programme, a lot of valuable knowledge and skills were acquired:

a. **Chemical Composition:** The students deepened their understanding of the chemical composition of coal, including its organic and inorganic components. This knowledge is crucial for evaluating its combustion properties.

b. **Quality Control:** The students learned about the importance of quality control measures in coal mining and power generation, emphasizing the need for precise analysis and adherence to industry standards.

c. **Environmental Considerations:** The exposure to the company's environmental practices highlighted the significance of minimizing the environmental impact associated with coal mining and thermal power generation. The interns gained insights into sustainable practices and environmental regulations governing the industry.

Conclusion:

The internship at the thermal power company was a transformative experience for all 13 M.Sc. Chemistry students. The interns are immensely grateful for the opportunity to learn from industry experts and witness firsthand the practical applications of their academic knowledge.