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## Design and development of nanopowders using induction coupled plasm and its applications

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Induction plasma technology (IPS) is the new way of producing high purity nano-powders at an industrial scale, all this made possible by 35kw IPS for the first time in India for industrial and pilot scale synthesis of various exotic nanopowders in India, out of the many Not only being a means of producing high purity powders, IPS is known for having a clean heat source which lacks induced contaminants assuring high-grade products. This complex technology is based on utilizing high voltage is passed through a coil with a conductor placed in between the coil to produce a high amount of heat at the conductor due to the effect of electromagnetic induction. With flowing gas being

used as the conductor, it will reach high-temperature extremes due to ionization or the gas into plasma. The most common gases used in this system include Argon, Hydrogen, and Oxygen as carriers. The IPS machine uses micron-sized powders as the feed which is then carried through the system by a carrier gas commonly being Argon which is then together heated up to extreme temperatures producing ionized metal oxides which are then subjected to a quenching gas which ensures homogenous nucleation. Several parameters are to be closely calculated and followed to ensure the desired nanoparticle size outcome.

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