Proposal for announcing seat under the Institute Internship Program

1. **Name of faculty member proposing**: Dr. Virendra Kumar Saharan
2. **Department/Centre**: Chemical Engineering
3. **Topic on which work is proposed**: Development of test method for determination of wide-range FAME (C8 & above) as total FAME content in Aviation Turbine Fuels.
4. **Preferred period of internship** (after May 20th): Between 20th May 2024 to 21st June 2024
5. **Qualification of student**: Students who completed his/her 6th semester of Chemical Engineering or Graduate in Chemical Engineering or MSc Degree in Chemistry.
6. **Brief description of work**:

   Aviation turbine fuel containing synthesized hydrocarbons is a complex mixture of hydrocarbons that varies depending on crude oil and renewable feed source and manufacturing process. The fuel shall consist of synthetic blending components and additives as prescribed in Indian Standard. Synthesized paraffinic kerosene (SPK) produced from hydroprocessed esters and fatty acids (HEFA) is used as a synthetic blending component in aviation turbine fuels (ATF) for use in civil aircraft and engines. These comprise bio-derived hydrocarbons, free fatty acids, and fatty acid methyl esters (FAME) that have been hydroprocessed to saturate the hydrocarbon molecules and remove all oxygen. Majority of feedstocks for biofuel production contain mainly C16 and C18 FAMEs (95% or more), however, some exceptional feedstocks such as palm kernel oil, coconut oil, and used cooking oil (UCO) contain significantly high amounts (around 80%) of C8, C10, C12, and C14 glycerides. Determination of fatty acid methyl esters (FAME) content in biodiesel is an important requirement for its quality control, and its content is restricted up to 5 ppm in IS 17081.
7. **Expected learning of student**:

   The students will learn the HPLC technique for analysis of biodiesel and aviation turbine fuels. The intern will gain a knowledge of aviation turbine fuels, its application, limiting conditions and need for its quality control. He/she will get a knowledge on manufacturing bases of ATF in India, manufacturing process, different routes of ATF synthesis etc.
8. **Nature of work**: Data collection, ATF sampling from different sources and its HPLCanalysis
9. If the seat is under project sponsored category: ~~Yes~~/**No**

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Signature of faculty member
Chemical Engineering