# Laboratory Report: Analysis of Various Oil Mixtures

Report ID: 2320

## Introduction

The characterization of complex mixtures via multiple analytical techniques provides a comprehensive understanding of the physical and chemical properties of each sample. This report documents the findings from the analysis of several oil-based mixtures using diverse instrumentation. The following sections provide detailed descriptions and observations of the tests performed.

## Methodology and Instruments

### FTIR Spectroscopy Analysis

Instrument:FTIR Spectrometer FTIR-8400

Sample Composition:Jojoba Oil, Gum, Vitamin E

### UV-Vis Spectrophotometry

Instrument:UV-Vis Spectrophotometer UV-2600

Sample Composition:Jojoba Oil, Beeswax, Glycerin

### Rheological Properties Testing

Instrument:Rheometer R-4500

Sample Composition:Coconut Oil, Beeswax, Glycerin

### Centrifugation

Instrument:Centrifuge X100

Sample Composition:Coconut Oil, Beeswax

High Performance Liquid Chromatography (HPLC)

Instrument:HPLC System HPLC-9000

Sample Composition:Almond Oil, Cetyl Alcohol, Glycerin

X-Ray Diffraction Analysis

Instrument:X-Ray Diffractometer XRD-6000

Sample Composition:Almond Oil, Gum

NMR Spectroscopy

Instrument:NMR Spectrometer NMR-500

Sample Composition:Almond Oil

Wear Testing

Instrument:Four Ball Tester FB-1000

Sample Composition:Almond Oil, Vitamin E

Viscosity Measurement

Instrument:Viscometer VS-300

| Sample Composition | Viscosity |
|---|---|
| Almond Oil, Gum | 7501.51 cP |
| Jojoba Oil | 2399.89 cP |

Conclusion

The comprehensive analysis of the various oil mixtures highlights the complexity and utility of combining natural oils with different additives. Each test and instrumentation provides critical insights into the chemical interactions and physical attributes of the components. The data presented is pivotal for further applications and product development. Further exploration may be directed towards optimizing these mixtures for specific industrial uses.