

## PREFACE

Hundreds of test methods are used by refinery laboratories for inspection of quality of the products and for assisting the production and process engineering groups for controlling the unit operations, process design, and problem solving. Such methods are covered by National and International agencies like Bureau of Indian Standards, ASTM, IP, UOP, DIN, ISO etc. While ASTM, Typically, BIS, IP, DIN, ISO test methods are used for arbitration and business agreements, whereas UOP test methods are normally used by the industry for in-house product quality control purposes. However, this is not a hard rule, all these test methods can be applied for the other purposes where this makes sense.

Refinery process operations have their local variations and troubleshooting the process problems can therefore be complex. It is not uncommon for these process problems to arise and in such situations, the expertise of the chemist can be sought in identifying and locating the cause of the problem or identify the problem area. For instance, some tubes of a cooler may leak and the product may creep into the cooling water fouling the whole cooling water circuit. In such a situation, the chemist is consulted for testing the cooling water and identifying the oil present in it so that the particular cooler, which is leaking, could be identified for rectification. No standard method will be available in such a case in any of the national or international publications. For this purpose, the chemist has to recall his or her skill and experience in providing a suitable answer to the problem.

In the situation mentioned above, the chemist may have to undertake a highly laborious job of extracting the oil in sufficient quantity without destroying the properties of the oil, from the cooling water scum which may usually contain a few hundred parts per million oil only in many cases and then conduct the necessary tests to identify the oil. Sometimes the answer may be withered away due to some unknown factors. The chemist is expected to make his efforts, to be true to his profession, although they become in vain, just as a doctor is expected to treat a patient although the chances for survival may be weak.

Similar cases are not uncommon in any chemical industry including the oil industry. For instance, a number of new demulsifiers are to be tested for their efficacy, the average molecular weight of naphtha used in steam reforming unit to be determined accurately, the reason for the boiling point of benzene or toluene going off, trace hydrocarbons in the nitrogen used for purging the system to be detected, individual hydrocarbons present in feed gas to sulfur recovery plant to be determined, are but a few examples. Every chemist, at some time or other in his or her profession, has to recall his or her reserves to deal with such type of situations where a standard test method is not available. Some may be simple and some may be complicated.