

The best advice for recording lab experiments (lab notebooks) and archiving data (NMR, GC, HPLC, optical rotations) is take the time to do a GOOD (NEAT) job in a **timely** fashion. For each experiment you should take 5-10 min to plan the experiment and 10-15 min to record results AS SOON AS AVAILABLE.

## **Lab Notebook (Remember to leave room for indexing)**

### **PLANNING**

- Date and write in ink
- Equation at the top of the page-provide the structure of products following reaction completion [include no reaction, decomposition, unidentified product(s)]
- Literature references
- Tabulate MW, density, amount, mmol, equivalent and SOURCE of starting materials (prepared substrates-notebook cross reference, e.g. GS-III-147A). Also solvent (quantity)-if distilled prior to use make note.

### **EXECUTION AND OBSERVATION**

- PLANNING & EXECUTION-Write-up-similar to typical JOC experimental. Particularly note reaction TIME, when reagents are added and rates, e.g. a solution of 10.0 g of X in 100 mL of Et<sub>2</sub>O was added dropwise over 30 min.
- ANALYSIS-For each reaction xerox or draw TLC-indicate reaction time-THREE LANES-starting material (sm), co-mixture (C) and reaction (R). Note developing solvent, UV or non-UV and staining system (PMA, Anis, KMnO<sub>4</sub> etc). GC, HPLC & NMR-on the chromatogram give reaction, time, conditions (column temperature, solvent system, pump rate etc)- Either staple to the page or place in binder- **IN THE LATTER CASE YOU MUST INDICATE IN THE NOTEBOOK A GC(HPLC) TRACE NUMBER AND LOCATION.**
- Physical observations, color, endothermic, exothermic, precipitate etc.
- Work-up-quenching, extraction procedure (3xXX mL), brine, drying method (MgSO<sub>4</sub>, K<sub>2</sub>CO<sub>3</sub>, etc).
- Isolation method-eluant system, if distilled temp (press)-note literature values when known.
- Yield-weight, mmol & % yield-give structure(s) & reference numbers for each product.

### **CHARACTERIZATION-Indicate reference numbers in the lab notebook for each NMR and IR Spectrum.**

- Physical appearance, colorless oil, white solid, colorless foam.
- Melting point
- Elemental analysis
- HRMS or LRMS
- IR spectrum
- <sup>1</sup>H and <sup>13</sup>C NMR
- **ON EACH PIECE OF DATA GIVE COMPOUND REF NUMBER AND STRUCTURE OR REACTION EQUATION.**