

## Paper Chromatography

### Instructions:

Use the following data to complete the Report sheet of the experiment in your laboratory manual. Write your weekly lab report for this lab, using this data and following the lab syllabus instructions (i.e., Pre lab, data and observation/discussion) and turn it in to your laboratory instructor on or before the assigned date.

Sample	Distance from origin to solvent front (cm)	Distance from origin to center of spot(s)	$R_f$	Color of spot(s)
1. Blue no.2	7.2 cm	1. 2.5 cm	1.	1. red
		2. 5.5 cm	2.	2. blue-purple
2. Red no.3	6.0	1. 1.2 cm	1.	1. red
		2.	2.	2.
3. Yellow no.5	6.6	1. 0.7	1.	1. red
		2. 3.0	2.	2. yellow
Unknown	7.0	1. 0.13	1.	1. red
		2. 3.2	2.	2. yellow
		3. 1.5	3.	3. red

# Paper Chromatography A Laboratory Manual

**Charles Anderson, David B.  
Macaulay, Molly M. Bloomfield, Joseph  
M. Bauer**



## **Paper Chromatography A Laboratory Manual:**

**Paper Chromatography** Richard J. Block, Raymond Le Strange, Gunter Zweig, 2013-09-03 Paper Chromatography A Laboratory Manual focuses on methods technologies and processes and aims to provide readers with a readily accessible source for the uses and adaptations of paper chromatography The book first offers information on general methods including descending ascending and ascending descending chromatography filter paper chromatopile reversed phase paper chromatography and paper electrophoresis The text then elaborates on quantitative methods and amino acids amines and proteins Discussions focus on visual comparison elution area of spot total color of spot maximum color density identification of amines separation of proteins and general directions The publication examines carbohydrates and aliphatic acids and steroids Topics include simple sugars miscellaneous derived sugars and aliphatic acids The text also ponders on purines pyrimidines and related substances and phenols aromatic acids and porphyrins The text is a valuable reference for readers interested in paper chromatography

**Paper Chromatography** Richard Joseph Block, 1958 **Paper Chromatography, A Laboratory Manual, by Richard J. Block, Raymond Le Strange, and Gunter Zweig**, 1952 A Manual of Paper Chromatography and Paper Electrophoresis Richard J. Block, Emmett L. Durrum, Gunter Zweig, 2013-10-22 A Manual of Paper Chromatography and Paper Electrophoresis provides a comprehensive discussion of the techniques of paper chromatography and paper electrophoresis The book is organized into two parts Part I on paper chromatography provides a readily accessible source for some of the many uses and adaptations of paper chromatography An effort has been made to write a practical manual in which tried and proved procedures employing relatively simple equipment and available reagents are summarized Part II on paper electrophoresis discusses basic principles and methodology The emphasis throughout has been on the separation of protein mixtures particularly blood serum This reflects the fact that it is in this particular application that paper electrophoresis has thus far not been challenged by paper chromatography whereas many of the smaller molecules can be resolved equally well or better by the thus far more widely employed chromatographic procedures **Laboratory Manual for Principles of General Chemistry** Jo Allan Beran, 2010-11-01 This new edition of the Beran lab manual emphasizes chemical principles as well as techniques The manual helps students understand the timing and situations for the various techniques The Beran lab manual has long been a market leading lab manual for general chemistry Each experiment is presented with concise objectives a comprehensive list of techniques and detailed lab intros and step by step procedures

**Comprehensive Laboratory Manual In Biology XI** Dr. J. P. Sharma, 2011-12 **Laboratory Manual in Biochemistry' 2006 Ed. , Laboratory Manual for Principles of General Chemistry** J. A. Beran, Mark Lassiter, 2022-08-16 Laboratory Manual for Principles of General Chemistry 11th Edition covers two semesters of a general chemistry laboratory program The material focuses on the lab experiences that reinforce the concepts that not all experimental conclusions are the same and depend on identifying an appropriate experimental procedure selecting the

proper apparatus employing the proper techniques systematically analyzing and interpreting the data and minimizing inherent variables As a result of good data a scientific and analytical conclusion is made which may or may not be right but is certainly consistent with the data Experiments write textbooks textbooks don't write experiments A student's scientific literacy grows when experiences and observations associated with the scientific method are encountered Further experimentation provides additional cause effect observations leading to an even better understanding of the experiment The 11th edition's experiments are informative and challenging while offering a solid foundation for technique safety and experimental procedure The reporting and analysis of the data and the pre and post lab questions focus on the intuitiveness of the experiment The experiments may accompany any general chemistry textbook and are compiled at the beginning of each curricular unit An Additional Notes column is included in each experiment's Report Sheet to provide a space for recording observations and data during the experiment Continued emphasis on handling data is supported by the Data Analysis section

Laboratory Manual for Chemistry Fundamentals Phyllis Buell, James Girard, 2002-08 Physical Sciences  
*Chemistry in Your Life Lab Manual* Ernest McGoran, 2006-03-31 Designed to help students understand the material better and avoid common mistakes Includes solutions and explanations to odd numbered exercises *Practical/Laboratory Manual Biology Class XI based on NCERT guidelines by Dr. Sunita Bhagia & Megha Bansal* Dr. Sunita Bhagia, Megha Bansal, 2020-06-23 An Excellent Book in Accordance with the latest syllabus for Class 11 Prescribed by CBSE NCERT and Adopted by Various State Education Boards Introduction 1 Necessary equipments chemicals and other things for practical work 2 General Instructions for practical work 3 Special Instructions for practical note book Drawing and Recording 4 Special Instructions for spotting EXPERIMENTS 1 To study and describe the flowering plant belonging to family one from each of the families a Solanaceae b Fabaceae c Liliaceae 2 To prepare temporary slide of transverse section of dicot monocot stem dicot monocot root 3 To study osmosis by potato osmometer 4 To study of plasmolysis in epidermal peel of Tradescantia or Rhoeo leaf 5 To study the distribution of stomata on the upper and lower surface of a leaf 6 To compare the rate of transpiration in upper and lower surface of the leaf 7 To test the presence of sugars Glucose Sucrose and Starch proteins and fats and to detect their presence in suitable plant and animal materials 8 To study the separation of plant pigments by paper chromatography 9 To study the rate of respiration in flower buds leaf tissue and germinating seeds 10A To test presence of urea in urine 10B To test presence of sugar in urine 10C To detect presence of albumin in urine 10D To test urine for presence of bile salt SPOTTING 1 Study of compound microscope 2 To study the plant specimen and identification with reasons Bacteria Oscillatoria Spirogyra Rhizopus Mushroom Yeast Liverwort Moss Fern Pine One Monocotyledonous plant One dicotyledonous plant and one Lichen 3 Study of animal specimens 1 Amoeba 2 Hydra 3 Fasciola Hepatica Liver fluke 4 Ascaris Lumbricoides 5 Hirudinaria Granulosa 6 Pheretima Posthuma 7 Palaemon 8 Bombyx Mori 9 Apis Indica Honeybee 10 Pila Globosa Snail 11 Asterias Starfish 12 Scoliodon Dogfish Shark 13 Labeo Rohita Rohu 14 Rana

Tigrina Frog 15 Hemidactylus Lizard 16 Columba Livia Pigeon 17 Orytolagus Cuniculus Rabbit 4A To study the plant tissues Palisade cells Guard cells Parenchyma Collenchyma Sclerenchyma Xylem and Phloem through prepared slide 4B To study the animal tissue squamous epithelium muscles fibres through prepared slide 4C To study mammalian blood smear by temporary permanent slide 5 Study of mitosis in root tip of onion 6 Study of different modification in root stem and leaves 7 To study and identify different types of inflorescence Racemose and Cymose 8 To study imbibition in seed raisins 9 To demonstrate that anaerobic respiration take place in the absence of air 10 To study human skeleton and joints 11 To study the external features of cockroach with help of model or chart

**Laboratory Manual Of Biochemistry** R.S.Sengar,2014-01-15 The present book Laboratory Manual of Biochemistry Methods and Techniques is the outcome of 17 years of teaching and research experience of the authors Biochemistry is a comparatively recent branch but the utility and variability of research work and the dazzling pace of its development has positioned this discipline in the forefront of scientific hierarchy As Biochemistry works at a molecular level i e finer than that accessed by the ultra modern optical or phase contrast microscopes it embraces other disciplines also Biochemistry has thus strengthened the integrated approach concept and solving biological riddles Biochemical Techniques are used in all branches of biological sciences and biotechnology Biochemical experiments are conducted in the laboratory as practical as well as for persuing research A researcher has to refer to many journals and books before he she could get to the working protocol for his her experiment This book attempts to give often used methods in a single volume This first edition is divided into 11 Units Each experiment includes principle requirements procedure calculation and observations At the end of each references for additional reading are provided Important precautions warnings and tips are given under the notes section In addition there are 12 appendices which give minute details on basic chemistry buffer preparations and other aspects required for the conduct of the experiments The methods given in the book will be useful for conducting practical classes at the undergraduate and postgraduate levels in biochemistry biotechnology microbiology agricultural sciences environmental science botany zoology nutrition pharmaceutical science and other biology related subjects This book will be a bonanza for the research workers since it covers procedures from the classical basic biochemistry to the modern PCR techniques

Laboratory Manual for Biotechnology and Laboratory Science Lisa A. Seidman,Mary Ellen Kraus,Diana Lietzke Brandner,Jeanette Mowery,2022-12-23 Provides the basic laboratory skills and knowledge to pursue a career in biotechnology Written by four biotechnology instructors with over 20 years of teaching experience it incorporates instruction exercises and laboratory activities that the authors have been using and perfecting for years These exercises and activities help students understand the fundamentals of working in a biotechnology laboratory Building skills through an organized and systematic presentation of materials procedures and tasks the manual explores overarching themes that relate to all biotechnology workplaces including forensic clinical quality control environmental and other testing laboratories Features Provides clear instructions

and step by step exercises to make learning the material easier for students There are Lab Notes for Instructors in the Support Material see tab below Emphasizes fundamental laboratory skills that prepare students for the industry Builds students skills through an organized and systematic presentation of materials procedures and tasks Updates reflect recent innovations and regulatory requirements to ensure students stay up to date Supplies skills suitable for careers in forensic clinical quality control environmental and other testing laboratories

*Practical/Laboratory Manual Chemistry Class XII based on NCERT guidelines by Dr. S. C. Rastogi, Er. Meera Goyal* Dr. S. C. Rastogi ,Er. Meera Goyal,2020-06-22

**A Surface Chemistry**

- 1 To prepare colloidal solution sol of starch
- 2 To prepare a colloidal solution of egg albumin
- 3 To prepare colloidal solution of gum
- 4 To prepare colloidal solution of aluminium hydroxide  $\text{Al}(\text{OH})_3$
- 5 To prepare colloidal solution of ferric hydroxide  $\text{Fe}(\text{OH})_3$
- 6 To prepare colloidal solution of arsenious sulphide  $\text{As}_2\text{S}_3$
- 7 To purify a freshly prepared sol by dialysis
- 8 To compare the effectiveness of different common oils Castor oil cotton seed oil coconut oil kerosene oil mustard oil in forming emulsions

**Viva Voce B Chemical Kinetics**

- 1 To study the effect of concentration on the rate of reaction between sodium thiosulphate and hydrochloric acid
- 2 To study the effect of temperature on the rate of reaction between sodium thiosulphate and hydrochloric acid
- 3 To study the rate of reaction of iodide ions with hydrogen peroxide at different concentrations of iodide ions
- 4 To study the rate of reaction between potassium iodate  $\text{KIO}_3$  and sodium sulphite  $\text{Na}_2\text{SO}_3$  using starch solution as indicator

**Viva Voce C Thermochemistry**

- 1 Determine the enthalpy of dissolution of copper sulphate  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$  in water at Room temperature
- 2 To determine the enthalpy of neutralization of the reaction between  $\text{HCl}$  and  $\text{NaOH}$
- 3 To determine enthalpy change during the interaction between acetone and chloroform

**Viva Voce D Electrochemistry**

- 1 To study the variation of cell potential in  $\text{Zn}|\text{Zn}^{2+}||\text{Cu}^{2+}|\text{Cu}$  with change in concentration of electrolytes  $\text{CuSO}_4$  or  $\text{ZnSO}_4$  at room temperature

**Viva Voce E Chromatography**

- 1 To separate the coloured components pigment present in the given extract of leaves and flowers by ascending paper chromatography and find their  $R_f$  values
- 2 To separate the coloured components present in the mixture of red and blue inks by ascending paper chromatography and find their  $R_f$  values
- 3 To separate  $\text{Co}^{2+}$  and  $\text{Ni}^{2+}$  ions present in the given mixture by using ascending paper chromatography and determine their  $R_f$  values

**Viva Voce F Preparation of Inorganic Compounds**

- 1 Preparation of double salt of ferrous ammonium sulphate Mohr's salt from ferrous sulphate and ammonium sulphate
- 2 To prepare a pure sample of potash alum fitkari
- 3 Preparation of crystals of potassium ferric oxalate or potassium trioxalato ferrate III

**Viva Voce G Preparation of Organic Compounds**

- 1 Preparation of iodoform from ethyl alcohol or acetone
- 2 Preparation of acetanilide in laboratory
- 3 Preparation of  $\beta$ -Naphthol aniline dye
- 4 To prepare a pure sample of dibenzalacetone
- 5 To prepare a pure sample of p nitro acetanilide

**Viva Voce H Tests for the Functional Groups Present in Organic Compounds**

**Viva Voce I Study of Carbohydrates Fats and Proteins**

- 1 To study simple reactions of carbohydrate
- 2 To study simple reactions of fats
- 3 To study simple reactions of proteins
- 4 To investigate presence of carbohydrates fats and proteins in food stuffs

**Viva Voce J Volumetric Analysis**

- 1 To prepare 250 ml of  $M/10$  solution of oxalic

acid 2 To prepare 250 ml of M 10 solution of ferrous ammonium sulphate 3 Prepare M 20 solution of oxalic acid with its help find out the molarity and strength of the given solution of potassium permanganate 4 Prepare M 20 solution of Mohr's salt using this solution determine the molarity and strength of potassium permanganate solution Viva Voce K Qualitative Analysis Viva Voce INVESTIGATORY PROJECTS 1 To study the presence of oxalate ions in guava fruit at different stages of ripening 2 To study the quantity of casein present in different samples of milk 3 Preparation of soyabean milk and its comparison with natural milk with respect to curd formation effect of temperature etc 4 To study the effect of potassium bisulphite as food preservative at various concentrations 5 To study the digestion of starch by salivary amylase and the effect of pH and temperature on it 6 To study and compare the rate of fermentation of the following materials wheat flour gram flour potato juice and carrot juice 7 To extract essential oils present in saunf aniseed ajwain coriander ilaichi cardamom 8 To detect the presence of adulteration in fat oil and butter 9 To investigate the presence of NO<sub>2</sub> in brinjal

*Green Chemistry Laboratory Manual for General Chemistry* Sally A. Henrie, 2015-03-18 Green chemistry involves designing novel ways to create and synthesize products and implement processes that will eliminate or greatly reduce negative environmental impacts Providing educational laboratory materials that challenge students with the customary topics found in a general chemistry laboratory manual this lab manual enables students to see how green chemistry principles can be applied to real world issues Following a consistent format each lab experiment includes objectives prelab questions and detailed step by step procedures for performing the experiments Additional questions encourage further research about how green chemistry principles compare with traditional more hazardous experimental methods Plant Biochemistry and Phytopharmaceutical Laboratory Manual Mr. Rohit Manglik, 2024-07-26 Hands on experiments related to plant based biochemistry medicinal plant components extraction and quality analysis of herbal formulations **Laboratory Manual on Biotechnology** P. M. Swamy, 2008

Environmental Monitoring and Analytical Chemistry Laboratory Manual Mr. Rohit Manglik, 2024-07-26 Practical training in measuring air water and soil pollutants using instruments like spectrophotometers gas analyzers and titration techniques

*Laboratory Experiments to Accompany General, Organic and Biological Chemistry* Charles Anderson, David B. Macaulay, Molly M. Bloomfield, Joseph M. Bauer, 2013-02-04 This General Organic and Biochemistry text has been written for students preparing for careers in health related fields such as nursing dental hygiene nutrition medical technology and occupational therapy It is also suited for students majoring in other fields where it is important to have an understanding of the basics of chemistry An integrated approach is employed in which related general chemistry organic chemistry and biochemistry topics are presented in adjacent chapters This approach helps students see the strong connections that exist between these three branches of chemistry and allows instructors to discuss these interrelationships while the material is still fresh in students minds **Laboratory Manual** Jo A. Beran, 1990

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