

















Types of Chemical Reactions

Do atoms rearrange in predictable patterns during chemical reactions?

Why?

Recognizing patterns allows us to predict future behavior. Weather experts use patterns to predict dangerous storms so people can get their families to safety. Political analysts use patterns to predict election outcomes. Similarly, chemists classify chemical equations according to their patterns to help predict products of unknown but similar chemical reactions.

Model 1 - Types of Reactions

$$N_{y}(g) + 3H_{y}(g) \rightarrow 2NH_{y}(g)$$

$$2SO_j(g) + O_j(g) \rightarrow 2SO_j(g)$$

$$MgO(s) + H_2O(l) \rightarrow Mg(OH)_2(aq)$$

$$\mathrm{P_{2}O_{3}(g)} + 3\mathrm{H_{2}O(l)} \rightarrow 2\mathrm{H_{2}PO_{4}(aq)}$$

$$SO_{*}(g) + H_{*}O(l) \rightarrow H_{*}SO_{*}(aq)$$

serc single replacement reaction

$$2Al(NO_s)_s(aq) + 3Ca(s) \rightarrow 3Ca(NO_s)_s(aq) + 2Al(s)$$

$$2Al(s) + 6HCl(aq) \rightarrow 2AlCl_s(aq) + 3H_s(g)$$

$$Cl_j(g) + 2NaBr(aq) \rightarrow 2NaCl(aq) + Br_j(l)$$

$$ZnBr_{r}(xq) + F_{r}(g) \rightarrow ZnF_{r}(xq) + Br_{r}(l)$$

Son B Decomposition Reaction

$$MgCO_{\epsilon}(s) \rightarrow MgO(s) + CO_{\epsilon}(g)$$

$$8Li_*S(s) \rightarrow 16Li(s) + S_*(s)$$

$$2H_1O(1) \rightarrow 2H_1(g) + O_1(g)$$

$$2KClO_{s}(s) \rightarrow 2KCl(s) + 5O_{s}(g)$$

$$2Na_sO_s(s) \rightarrow 2Na_sO(s) + O_s(g)$$

$$(NH_s)_sCO_s(s) \rightarrow 2NH_s(g) + H_sO(0 + CO_s(g))$$

Ser D Double Replacement Reaction

$$AgNO_s(aq) + NaO((aq) \rightarrow AgO(s) + NaNO_s(aq)$$

$$2HNO_{s}(sq) + Mg(OH)_{s}(sq) \rightarrow Mg(NO_{s})_{s}(sq) + 2H_{s}O(l)$$

$$Na_sCO_s(aq) + CaCL_s(aq) \rightarrow CaCO_s(s) + 2NaCl_s(aq)$$

$$FeS(s) = 2HCl(aq) \rightarrow H_sS(g) + FeCl_s(aq)$$

$$HCl(aq) + NsOH(aq) \rightarrow H_1O(l) + NsCl(aq)$$

The chemical equations in Model 1 contain the phase notations (s), (f), (g), and (aq). Match
each numbel with its meaning.

dissolved in water







- Based on the examples provided, which set(s) of reactions in Model 1 typically involve ions in solution (A, B, C or D)?

 Set

 D
- Based on the examples provided, which set(s) of reactions in Model 1 typically involve gases and/or solids?
 Set. B





Pogil High School Chemistry Answer Key

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POGIL Shawn R. Simonson, 2023-07-03 Process Oriented Guided Inquiry Learning POGIL is a pedagogy that is based on research on how people learn and has been shown to lead to better student outcomes in many contexts and in a variety of academic disciplines Beyond facilitating students mastery of a discipline it promotes vital educational outcomes such as communication skills and critical thinking Its active international community of practitioners provides accessible educational development and support for anyone developing related courses Having started as a process developed by a group of chemistry professors focused on helping their students better grasp the concepts of general chemistry The POGIL Project has grown into a dynamic organization of committed instructors who help each other transform classrooms and improve student success develop curricular materials to assist this process conduct research expanding what is known about learning and teaching and provide professional development and collegiality from elementary teachers to college professors As a pedagogy it has been shown to be effective in a variety of content areas and at different educational levels This is an introduction to the process and the community Every POGIL classroom is different and is a reflection of the uniqueness of the particular context the institution department physical space student body and instructor but follows a common structure in which students work cooperatively in self managed small groups of three or four The group work is focused on activities that are carefully designed and scaffolded to enable students to develop important concepts or to deepen and refine their understanding of those ideas or concepts for themselves based entirely on data provided in class not on prior reading of the textbook or other introduction to the topic The learning environment is structured to support the development of process skills such as teamwork effective communication information processing problem solving and critical thinking The instructor s role is to facilitate the development of student concepts and process skills not to simply deliver content to the students The first part of this book introduces the theoretical and philosophical foundations of POGIL pedagogy and summarizes the literature demonstrating its efficacy The second part of the book focusses on implementing POGIL covering the formation and effective management of student teams offering guidance on the selection and writing of POGIL activities as well as on facilitation teaching large classes and assessment The book concludes with examples of implementation in STEM and non STEM disciplines as well as guidance on how to get started Appendices provide additional resources and information about The POGIL Project Introductory Chemistry Michael P. Garoutte, Ashley B. Mahoney, 2015-08-10 The ChemActivities found in Introductory Chemistry A Guided Inquiry use the classroom guided inquiry approach and provide an excellent accompaniment to any one semester Introductory text Designed to support Process Oriented Guided Inquiry Learning POGIL these materials provide a variety of ways to promote a student focused active classroom that range from cooperative learning to active student participation in a more traditional setting Chemical Pedagogy Keith S Taber, 2024-12-20 How should chemistry be taught in schools colleges and universities Chemical Pedagogy discusses teaching approaches and techniques

the reasoning behind them and the evidence for their effectiveness. The book surveys a wide range of different pedagogic strategies and tactics that have been recommended to better engage learners and provide more effective chemistry teaching These accounts are supported by an initial introduction to some key ideas and debates about pedagogy the science of teaching Chemical Pedagogy discusses how teaching innovations can be tested to inform research based practice Through this book the author explores the challenges of carrying out valid experimental studies in education and the impediments to generalising study results to diverse teaching and learning contexts As a result the author highlights both the need to read published studies critically and the value of teachers and lecturers testing out recommended innovations in their own classrooms Chemical Pedagogy introduces core principles from research into human cognition and learning to provide a theoretical perspective on how to best teach for engagement and understanding An examination of some of the more contentious debates about pedagogy leads to the advice to seek optimally guided instruction which balances the challenge offered to learners with the level of support provided This provides a framework for discussing a wide range of teaching approaches and techniques that have been recommended to those teaching chemistry across educational levels including both those intended to replace teaching from the front and others that can be built into traditional lecture courses to enhance the learning experience General, Organic, and Biological Chemistry Michael P. Garoutte, 2014-02-24 Classroom activities to support a General Organic and Biological Chemistry text Students can follow a guided inquiry approach as they learn chemistry in the classroom General Organic and Biological Chemistry A Guided Inquiry serves as an accompaniment to a GOB Chemistry text It can suit the one or two semester course This supplemental text supports Process Oriented Guided Inquiry Learning POGIL which is a student focused group learning philosophy of instruction The materials offer ways to promote a student centered science classroom with activities The goal is for students to gain a greater understanding of Chemistry Antony C. Wilbraham, Dennis D. Staley, Michael S. Matta, Edward L. chemistry through exploration Waterman, 2004-07-01 Prentice Hall Chemistry meets the needs of students with a range of abilities diversities and learning styles by providing real world connections to chemical concepts and processes The first nine chapters introduce students to the conceptual nature of chemistry before they encounter the nore rigorous mathematical models and concepts in later chapters The technology backbone of the program is the widely praised Interactive Textbook with ChemASAP which provides frequent opportunities to practice and reinforce key concepts with Animations Simulaitons Assessment and Problem solving tutorials Surviving Chemistry BFF Effiong Eyo, 2014-09-27 Surviving Chemistry BFF Student friendly Homework Helper and Test Prep Guide for 13 topics of high School chemistry Before you get too fast lost in chem before you start missing a bunch of homework before your grades get too far below your standard before you get too frustrated and give up on chem try this book Written and design to help struggling and frustrated chemistry students get their homework done quicker and better as well as study understand and remember more for quizzes tests and exams Written to follow NYS Regents Chemistry

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