



In *Fascinating Intro to Chemistry*, Dr. Margulies gives students an introduction to intramolecular bonding. The method that atoms use to bond together and make molecules determines the properties of the resulting molecule. Understanding these bonds is crucial to understanding chemistry. Join Dr. Margulies for a fascinating introductory course.

### Lesson 1: Forces

- Gravitational force
- Magnetic force
- Electrical charges
- Moving electrical charges

### Lesson 2: Structure of the Atom

- The first 2 atoms
- The Hindenburg
- Party balloon

### Lesson 3: The First 20 Elements

- The periodic table
- Lithium
- Beryllium
- Boron
- Carbon
- Nitrogen
- Oxygen
- Flourine
- Neon
- Sodium
- Magnesium

- Aluminum
- Silicon
- Phosphorus
- Sulfur
- Chlorine
- Argon
- Potassium
- Calcium
- The full periodic table

### Lesson 4: Electrical Charges

- Electrons
- Electrons repel
- Electrons travel in pairs
- Electrical neutrality
- Van der Graaff generator
- Removing valence electrons
- Ions
- Electricity
- Electrons on yarn
- Static electricity

## Lesson 5: Ionic Bond

- Unfilled valence rings
- The Ionic Bond

## Lesson 6: Properties of the Ionic Bond

- Sodium chloride molecule
- Polarity
- Ionic bonds form solidst
- Ionic crystals
- Crystals crack easily
- Dissolving ionic crystals

## Lesson 7: Causation

- Issues of Causation
- Exampes of Causation
- Control group
- Hypothesis
- Predictions
- Designing an experiment

## Lesson 8: Polar Covalent Bond

- Capturing the cathode gas
- Identifying gases
- Making a water molecule
- Arranging hydrogen atoms
- Modifying the arrangement of hydrogen atoms
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## Lesson 9: Properties of the Polar Covalent Bond

- Water molecules stick together
- Water molecules continually move
- Ice
- Static electricity
- Polarity of ionic molecules

## Lesson 10: Nonpolar Covalent Bond

- Electrolysis of water
- Oxygen
- Neon gas
- Methane

## Lesson 11: Properties of Nonpolar Covalent Bond

- London dispersion forces
- Gases expand
- Steam
- Gases have weight
- Air pressure
- Air has weight
- Mole
- Gas volume vs gas weight

## Lesson 12: Metallic Bond and its Properties

- Metal atoms
- Metal ion arrangement
- Metals bend
- Conductors of electricity
- Alloys

## Lesson 13: The Nucleus

- Protons
- Graphing force of repulsion
- Neutrons
- Isotopes
- Atomic weight
- Radioactivity