Paper chromatography assignment

The Hydrogen Atom Spectrum Evan J. Collins C. N. Peck June 16, 2009 INTRODUCTION MATERIALS _Emission Spectra an the Electronic Structure of Atoms_ Spectroscope Black Ink Pen Graphite Pencil Notebook Mercury Spectrum Hydrogen Spectrum PROCEDURE Calibration of the Spectroscope: Using the spectroscope the four most visible lines on the scale were measured. Violet, blue, green, and yellow were all visible. With the ink pen the measurements were recorded. A known wavelength (nm) vs. measured lines (cm) graph was then drawn from the measurements.

Observation and Measurements of the Hydrogen Spectrum: Using the calibrated spectroscope the scale position of the observable lines of the hydrogen emission spectrum were measured. Red, turquoise, violet, and purple were all visible. Using the measurements and the calibration graph the wavelength of the lines were determined. The relative error was calculated using: Accepted Value Values of wavelength for the hydrogen atom spectrum were converted to kJ/mol. Using a form of the Rydberg equation, the Rydberg constant was calculated for each of the lines measured.

This constant was used to then calculate percentage error. Data Calibration of the Spectroscope Observations and Measurements of the Hydrogen Spectrum CALCULATIONS (Convert wavelength values to corresponding energy in kJ/mol) 680 x 10^-9 2. 92 x 10^-19 J x (6. 022 x 10^23) / (1000 J) = 176 kJ/mol (Calculate the value of the Rydberg constant) (1/680)/(. 25-. 30) = . 00147059/(. 25000-. 11111)= 0. 0105042 x 10^-7 = Rh= 105, 040 cm ^-1 (Calculate Percentage Error) 105040 – 109678 X 100 = 4. 23% Error 109678 DISCUSSION/CONCLUSION