

## Key to Excel Spreadsheet

(Refer to numbers in bold and italics and enclosed within double lines on the attached spreadsheet)

Number Statistic

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- 1 Also called “correlation coefficient” or “coefficient of determination”; best values near -1 or 1 (ref. 1)
  - 2 Accounts for amount of total variation accounted for by the model; best value near 1
  - 3 Accounts for the expected variation accounted for by the model if you used a new set of concentrations; will normally be slightly less than R square (ref. 1)
  - 4 Calculated by  $\sqrt{MS_{residual}}$  (ref. 2)
  - 5 Number of independent samples (concentrations) used in the calibration
  - 6 Degrees of freedom used in ANOVA
  - 7 Sum of the squares
  - 8 Mean square (sum of the squares divided by the degrees of freedom); note that  $MS_{residual}$  is  $s^2_{y/x}$
  - 9  $\frac{MS_{regression}}{MS_{residual}}$ ; model fits better if larger
  - 10 p-value (1- ); better if small (ref. 1)
  - 11 Intercept is y-intercept; x variable 1 is slope
  - 12 Portion of the confidence limit expression without the t-value from the table; small is better
  - 13 t-test value for the regression coefficient (not the t-value from the table that you used to calculate the confidence limit); e.g.  $\frac{b}{SE(b)}$  for slope where SE(b) stands for the standard error for the slope; larger is better for the slope; smaller is better for intercepts near 0 (ref. 2)
  - 14 p-value for the t-test value for the regression coefficient
  - 15 Coefficient minus the % confidence limit (Excel lets you pick what confidence limit you require)
  - 16 Coefficient plus the % confidence limit
  - 17 For which x-value you are determining the residual
  - 18  $\hat{y}_i$
  - 19  $e_i$  or  $y_i - \hat{y}_i$ ; small absolute value is better
  - 20 Also called “Studentized t-test for the residual”; residual (19) divided by the standard error (4); a large value (?) should be checked to see if it is an outlier

### References:

- 1) *Systat for DOS: Using SYSTAT, Version 6 Edition*. Evanston, IL; SYSTAT, Inc., 1994, 871 pp.
- 2) Mark, Howard; Workman, Jerry. *Statistics in Spectroscopy*. Academic Press: Boston, 1991.