ISSN 1757- 5958

amc technical briefs

Editor: Michael Thompson Analytical Methods Comm

4*	-	+	-	y_4
5*	-	-	+	y_5
6	+	-	+	y_6
7*	+	+	+	y_7
8	-	+	+	y_8

If all eight experiments are used in the complete factorial design, we can calculate the effects of the three factors separately, the three possible two-fold interactions (i.e. pH interacting with ionic strength and with solvent, and ionic strength interacting with solvent) and the three-fold interaction. Such calculations are described in many standard texts and performed readily by experimental design programs. If we do only the four experiments marked with an asterisk we can find only the effects of the main factors, and *assume* that no significant interactions occur.

For the fractional design using experiments 2, 4, 5 and 7 the calculations are very easy. The effect of changing from high pH to low pH is clearly given by $0.5\{(y_4 + y_7) - (y_2 + y_5)\}$. Very often it is immediately apparent from such results whether or not a factor is an important one, but significance tests are also available to compare the effects with the random measurement error. The design is known as a "half-factorial" design, for obvious reasons. When more factors are under study, so that a full factorial design would involve too many experiments, other designs such as quarter-factorial ones may be feasible. In general, the more experiments we can do, the more information we shall get, including information on interactions as well as on the main effects. But as the number of factors and experiments grows a further complication may arise.

Confound It! He's got an alias!

In a sy