

When is the acid group of the Cogent UDA HPLC column ionized - Tech Information

The pKa of most simple carboxylic acids is in the range of ~pH 4.7-5.0.

The carboxylic acid group of the Cogent UDA™ HPLC column can be either ionized or non-ionized depending on the pH of the mobile phase used in your method. The pH at which the group is ionized or non-ionized is dictated by the compound's pKa and at the pKa value, exactly 50% of the carboxylic acids are ionized and 50% are non-ionized. For this reason, a method that uses a pH near the pKa is undesirable since it can lack robustness.

At pH values about 1 or 1.5 units away from the pKa, the analyte exists almost entirely as either ionized or non-ionized form. pH values above the pKa will produce an ionized carboxylate while pH values below the pKa will produce a non-ionized carboxylic acid.

This is called Weak Cation Exchange (wcx) behavior. Different results may be obtained depending on whether the group is charged or neutral. In contrast, Strong Cation Exchange materials are very acidic and have a low pKa. This means that they will be ionized throughout the useable HPLC pH range.

