In order to have useful information, you need to be able to detect what comes out of the column. The analytes are ions that come out in separate sample bands, which means there is a small part of the solution coming out with a higher concentration of ions.

**Based on your knowledge, how could you possibly detect ions or changes in ion concentrations coming off of the column?**

There are many different possibilities of detecting ions. Due to its simplicity, most instruments use conductivity.

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**Conductivity**

Conductivity is the measure of a material's ability to conduct electricity. Since conductivity is proportional to the number of ions in solution, it is the primary method of detection for ion chromatography. One problem with measuring conductivity is the high conductivity that may be present in the eluent. Conductivity became common with the use of a suppressor.

The suppressor is a cation or anion exchanger after the ion exchange column that replaces the eluent ions with either H+ or OH-. If you are performing cation analysis, the eluent is acid, and the exchanger replaces the eluent counterion with OH-. This then converts much of the eluent to neutral H2O. Thus the suppressor greatly reduces the conductivity contribution from the eluent, enabling the signal from the analyte of interest to be more readily detected.

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**Other Methods**

Other detection methods have been coupled with IC, including mass spectrometry, atomic spectroscopy, fluorescence, luminescence, UV-Vis, and potentiometric. Most require post-column reactions to generate the signal or are so selective they are not useful in detecting multiple analytes simultaneously. Of these methods, the most likely to be broadly used is mass spectrometry—(i.e. the determination of ionic compounds in toothpaste Cavalli, S; Herrmann, H; Höfler, F; LC GC Europe, 2004, 17(3), 160).