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RECENT ADVANCES IN UV-VISUALIZATION OF ANIONS

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The ion-interaction model (IIM) is the only model which acknowledges the dual forces which cooperate to bring about retention in paired-ion systems: 1) an electrostatic force, and 2) a lipophilic force. First proposed in 1979, the IIM is wider in scope than previous models and is unique in its ability to account for the behavior of positive, negative, and neutral species in paired-ion HPLC systems. This model correctly predicted that UV-visualization of non-UV-absorbing samples would be possible due to coelution of sample species with UV-absorbing "paired-ion" reagent ions in the mobile phase of a reversed-phase system. Previous reports have discussed UV-visualization of organic ions. This paper will present our recent efforts to determine optimal conditions for quantitative detection using UV-visualization LC of anions. UV-visualization has advantages over the traditional ion exchange separation/conductivity detection of anions in that a simple aqueous mobile phase is used with a reverse-phase column and standard UV detection. While the simplicity of the UV-visualization technique is appealing, some caution is necessary with regard to quantitation. Our findings concerning the influence of ionic strength on stability of retention time, reproducibility of peak area, peak shape, detector's response, sensitivity, and linear dynamic range will be discussed.