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Gas Chromatographic Separation of Phenol Derivatives by Schiff-Base Liquid Crystalline Stationary Phases

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Abstract: The chromatographic behaviour of liquid crystalline compounds benzylidene-p-aminobenzoic acid and 4-(p-methyl benzylidene)-p-aminobenzoic acid as stationary phases for the separation of dimethylphenol isomers was investigated. These isomers were analysed on benzylidene-p-aminobenzoic acid within a nematic range of 169-194 °C with a temperature interval of 5 °C. Better peak resolution was at a column temperature of 190 °C. The analysis was repeated on a 4-(p-methyl benzylidene)-p-aminobenzoic acid column at a nematic temperature of 256 °C, which represented the end of the nematic range, and gave the optimum peak resolution. It was found that isomer better separation was obtained at 20% loading for both liquid crystal materials. Other columns of different liquid crystalline percentages (15% and 25%) were used. A chromatogram with unoverlapped peaks was only obtained in both cases at 20% column loading. The order of elution isomers under the applied chromatographic conditions is discussed. The separation of these isomers is also discussed on the basis of stereo chemical confirmations.

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