

13.18 Chemical tempering will be accomplished by substitution, for Na^+ , another monovalent cation with a slightly larger diameter. From Table 12.3, both K^+ and Cs^+ fill these criteria, having ionic radii of 0.138 and 0.170 nm, respectively, which are larger than the ionic radius of Na^+ (0.102 nm). In fact, soda-lime glasses are tempered by a K^+ - Na^+ ion exchange.