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Abstract: Vernadite is a poorly crystalline phyllomanganate that widely distributed in natural environments, and plays a pivotal role in the geochemical transformations of heavy metal and other pollutants. Though many works have done about the reaction mechanisms between vernadite-like minerals and As(III)/Cr(III), the effects of some basic structure characteristics of the mineral, such as Mn average oxidation state (AOS), on the oxidation of As(III)/Cr(III) are