

Gold extraction at the molecular level using ?- and ?-cyclodextrins

## Description

Cyclodextrins (CDs) are known for their ability to form supramolecular interactions with a wide range of guest molecules. In this review, the focus is given on the inclusion of complex aurate ions such as tetrabromoaurate, dicyanoaurate, and a few other tetrahaloaurates. The review describes the properties of self-assembly of cyclodextrins with these ions, with a highlight to ?-CD and, more recently, ?-CD, requiring the use of a co-former/precipitating agent. Practical applications of this ability include the selective isolation of gold from a variety of sources, ranging from gold-rich mining ores and tailings/mining wastes to gold-bearing metal scraps obtained from discarded electronic devices. Moreover, it describes the development of a method based on the spontaneous complex formation between ?-CD and tetrabromoaurate, as well as its current status of use in a few mining sites in the United States.



**Figure:** Schematic depiction of the ?-CD channels containing the polyionic {[K(OH2)6]+[AuBr4]?}*n* chain inside. Reproduced from "Selective isolation of gold facilitated by second-sphere coordination with ?-cyclodextrin © 2013 Z. Liu et al., published by

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