

ABSTRACT

Disclosed is a method for preparing solid nitrosyl ruthenium nitrate by using a waste catalyst containing ruthenium. Steps of the method are: drying and calcining a waste catalyst containing ruthenium to acquire a black solid containing ruthenium, grinding the black solid containing ruthenium into powder, feeding hydrogen for reduction to form metal ruthenium, oxidizing metal ruthenium by using mixed gas of ozone and air to produce a ruthenium tetraoxide gas, collecting the gas, feeding the gas in a nitric acid solution, adding solid sodium nitrite to prepare a solution containing nitrosyl ruthenium nitrate, and finally using diethyl ether for extraction, and evaporating diethyl ether to acquire a nitrosyl ruthenium nitrate solid. The method can effectively reclaim noble metal ruthenium in various load-type waste catalysts containing ruthenium, so as to achieve effective recycling of ruthenium resources, and has simple operation steps and does not involve the introduction of ruthenium intermediates, which ensures a high product yield. The acquired solid nitrosyl ruthenium nitrate is free of halogen, has high purity, and is capable of being directly applied to the preparation of catalysts.