

Title (en)
METHOD FOR THE PRODUCTION OF MULTIMETAL CYANIDE COMPOUNDS

Title (de)
VERFAHREN ZUR HERSTELLUNG VON MULTIMETALLCYANIDVERBINDUNGEN

Title (fr)
PROCÉDÉ DE FABRICATION DE COMPOSÉS DE CYANURES MULTIMÉTALLIQUES

Publication
EP 1963012 A1 20080903 (DE)

Application
EP 06819719 A 20061123

Priority
• EP 2006068841 W 20061123
• DE 102005057895 A 20051202

Abstract (en)
[origin: DE102005057895A1] Preparation of multi-metal cyanide compound comprises reacting an aqueous solution of a metal salt (I) with an aqueous solution of a cyanometallate compound (II), optionally in the presence of an organic ligand, organic additive and/or surface active agent to give a multi-metal cyanide compound (III); and reacting (III) with a metal salt (IV), which is different from (II). Preparation of multi-metal cyanide compound comprises reacting an aqueous solution of a metal salt (I) of formula (M 1> gX n) with an aqueous solution of a cyanometallate compound (II) of formula (M 3> r[M 2>(CN) b] d), optionally in the presence of an organic ligand, organic additive and/or surface active agent to give a multi-metal cyanide compound (III) of formula (M 1> a[M 2>(CN) b] dfM 1> jX kh(H 2O)eLzP 1>); and reacting (III) with a metal salt (IV) of formula (M 4> sY 1> t), which is different from (II). M 1>a metal ion such as Zn 2+>, Fe 2+>, Fe 3+>, Co 2+>, Co 3+>, Ni 2+>, Mn 2+>, Sn 2+>, Sn 4+>, Pb 2+>, Al 3+>, Sr 2+>, Cr 3+>, Cd 2+>, Cu 2+>, La 3+>, Ce 3+>, Ce 4+>, Eu 3+>, Mg 2+>, Ti 4+>, Ag +>, Rh 2+>, Ru 2+>, Ru 3+> or Pd 2+>; M 2>a metal ion such as Fe 2+>, Fe 3+>, Co 2+>, Co 3+>, Mn 2+>, Mn 3+>, Ni 2+>, Cr 2+>, Cr 3+>, Rh 3+>, Ru 2+> or Ir 3+>; X : an anion such as halogenide, OH, sulfate, hydrogensulfate, carbonate, hydrogencarbonate, cyanide, thiocyanate, isocyanate, cyanate, carboxylate, oxalate, nitrate and/or nitrite (NO 2 ->) or uncharged species such as CO, H 2O or NO; Y 1>an anion such as halogenide, sulfate, hydrogensulfate, disulfate, sulfite, sulfonate (=RSO 3 ->, where R is 1-20C alkyl, aryl or 1-20C alkylaryl), carbonate, hydrogencarbonate, cyanide, thiocyanate, isocyanate, isothiocyanate, cyanate, carboxylate, oxalate, nitrate, nitrite, phosphate, hydrogenphosphate, dihydrogenphosphate, diphosphate, borate, tetraborate, perchlorate, tetrafluoroborate, hexafluorophosphate or tetraphenylborate; L : a ligand, mixable with water, such as alcohol, aldehyde, ketone, ether, polyether, ester, polyester, polycarbonate, urea, amide, nitrile and/or sulfide; P 1>an organic additives such as polyether, polyester, polycarbonate, polyalkyleneglycolsorbitaneester, polyalkyleneglycolglycidylether, polyacrylamide, poly(acrylamide-co-acrylic acid), polyacrylic acid, poly(acrylamide-co-maleic acid), polyacrylnitrile, polyalkylacrylate, polyalkylmethacrylate, polyvinylmethylether, polyvinylethylether, polyvinylacetate, polyvinylalcohol, poly-N-vinylpyrrolidone, poly(N-vinylpyrrolidone-co-acrylic acid), polyvinylmethylketone, poly(4-vinylphenol), poly(acrylic acid-co-styrene), oxazoline polymer, polyalkyl imine, maleic acid, maleic acid anhydride copolymer, hydroxyethylcellulose, polyacetate, ionic surfaces and surface area active compound, gallic acid or its salt, ester, amide, carbonic acid ester of polyvalent alcohols or glycoside; M 3>H or an alkali- or alkaline earth metal; M 4>alkalimetal ion or an ammonium ion (NH 4 +>) or alkylammonium ion (R 4N +>, R 3NH +>, R 2NH 2 +>, RNH 3 +> (where R is 1-20C alkyl)); and a, b, d-g, n, r, s, j, k, t : a whole or fractional number that is greater than zero (where a, b, d, g, n, j, k, r, s and t are selected such that the electro neutrality is assured); and e, f, h, z : greater than or equal to 0. Provided that M 1> and M 2> are same or different. Independent claims are included for: (1) a multi-metal cyanide compound (V) of formula (M 1> a[M 2>(CN) b] dfM 1> uX vY 1> mh(H 2O)eLzP) that is prepared from the above process; and (2) the preparation of polyetheralcoholene comprising adding an alkylene oxide to a hydrogen functionalized starting substance, where multi-metal cyanide compound is used as a catalyst. u, v, m : whole or fractional numbers that are greater than zero, where the electro neutrality is assured.

IPC 8 full level
B01J 27/26 (2006.01)

CPC (source: EP KR US)
B01J 27/26 (2013.01 - EP KR US); **B01J 37/02** (2013.01 - KR); **B01J 37/0201** (2013.01 - EP US); **B01J 37/30** (2013.01 - EP KR US); **C08G 18/4866** (2013.01 - EP US); **C08G 65/26** (2013.01 - KR); **C08G 65/2663** (2013.01 - EP US); **B01J 27/02** (2013.01 - EP US)

Citation (search report)
See references of WO 2007082596A1

Designated contracting state (EPC)
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI SK TR

DOCDB simple family (publication)
DE 102005057895 A1 20070606; CN 101336136 A 20081231; CN 101336136 B 20120208; EP 1963012 A1 20080903; JP 2009517511 A 20090430; JP 5121718 B2 20130116; KR 20080075214 A 20080814; US 2008300376 A1 20081204; US 8119825 B2 20120221; WO 2007082596 A1 20070726

DOCDB simple family (application)
DE 102005057895 A 20051202; CN 200680052199 A 20061123; EP 06819719 A 20061123; EP 2006068841 W 20061123; JP 2008542734 A 20061123; KR 20087016076 A 20080701; US 9580506 A 20061123