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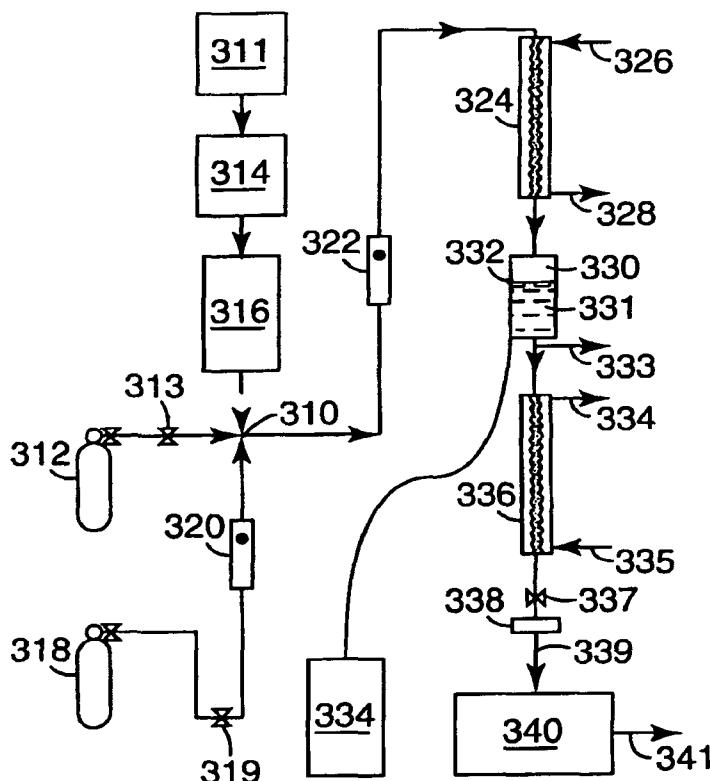
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[Continued on next page]

(54) **Title**: SELECTIVE OXIDATION OF CARBON MONOXIDE RELATIVE TO HYDROGEN USING CATALYTICALLY ACTIVE GOLD



(57) **Abstract**: The present invention provides technology for controlling, or tuning, the catalytic activity of gold provided upon nanoporous supports such as those derived from nanoparticulate, crystalline titania. In some aspects of practice, the surface of nanoparticulate media incorporated into a catalyst system of the present invention is provided with chemical modifications of the surface that dramatically suppress the ability of the resultant catalyst system to oxidize hydrogen. Yet, the system still readily oxidizes CO. In other words, by selecting and/or altering the nanoparticulate surface via the principles of the present invention, PROX catalysts are readily made from materials including catalytically active gold and nanoparticulate media. Additionally, the nanoparticulate support also may be optionally thermally treated to further enhance selectivity for CO oxidation with respect to hydrogen. Such thermal treatments may occur before or after chemical modification, but desirably occur prior to depositing catalytically active gold onto the support incorporating the nanoparticles.

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FIG. 3



MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

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B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 HOLM 8/04

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS(KIPO internal) "gold", "reform", "nanoparticle"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	KR 1020030044329 A (LEE, JUN YUB) 09 June 2003 See abstract, pages 1-8, claims 1-16	1-42
A	JP 07048101A (IDEMITSU KOSAN CO , LTD) 21 February 1995 See abstract, paragraphs [0001]-[0056], claims 1-7	1-42
A	JP 16146223A (NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL & TECHNOLOGY) 20 May 2004 See abstract, pages 1-9, claims 1-12, figures 1-4	1-42
A	US 6620535B2 (SUBHASISH MUKERJEE, et al) 16 September 2003 See abstract, columns 1-6, claims 1-25	1-42

 Further documents are listed in the continuation of Box C See patent family annex

* Special categories of cited documents
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 "X" document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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INTERNATIONAL SEARCH REPORT

Information on patent family members

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