is passed through the respective units for purging the residual reformed gas.

BATTERY MATERIALS

5632863

BATTERY PYROLYSIS PROCESS

Meador W R Pecos, TX, UNITED STATES

Used batteries and other material for reclamation and recovery or environmentally safe disposal are transferred from a feed bin by an auger into a crusher and then into a pyrolysis chamber. The feed system excludes air or oxygen from passing through the auger and crusher into the pyrolysis chamber. The material from the crusher is transferred by an auger through the pyrolysis chamber which is heated to a decomposition temperature between 350° and 650° F. and is decomposed. The pyrolysis chamber includes a vapor recovery system for removing the vapors and maintaining a vacuum in the pyrolysis chamber. The vapors are withdrawn through a heat exchanger and into the liquid/gas separator where the condensed liquids are removed and the gas is further processed. The residue from the pyrolysis chamber is discharged into a residue recovery system which includes a closed auger for transferring the residue from the pyrolysis chamber into a bin. A pressure sensitive switch which maintains a minimum level of solid material in the bin which acts as a seal to prevent air or oxygen from entering the pyrolysis chamber. The residue is transferred to a screening collector having an upper and a lower screen. The screens are vibrated and the finer sized metals are collected from the bottom of the screening collector, the heavier metals off the lower screen and the paper and plastic off the upper screen.

5633098

BATTERIES CONTAINING SINGLE-ION CONDUCTING SOLID POLYMER ELECTROLYTES

Narang Subhash; Ventura Susanna C Redwood City, CA, UNITED STATES assigned to SRI International

Novel batteries containing single-ion conducting polymer electrolytes (SPEs) are provided. The polymers are polysiloxanes substituted with fluorinated poly(alkylene oxide) side chains having associated ionic species. The polymers have the following structure (*See Patent for Chemical Structure*) (I) in which R1, R2 and n are as defined herein.

5633099

CARBONATE COMPOUNDS, NON-AQUEOUS ELECTROLYTIC SOLUTIONS AND BATTERIES COMPRISING NON-AQUEOUS ELECTROLYTIC SOLUTIONS

Yokoyama Keiich; Hiwara Akio; Fujita Shigeru; Omaru Atsuo Sodegaura, JAPAN assigned to Mitsui Petrochemical Industries Ltd; Sony Corporation

A novel carbonate compound represented by the general formula (I): (*See Patent for Tabular Presentation*) PS wherein R3 represents an alkyl group or an alkyl group substituted with one or more halogen atoms, and R4 represent an alkyl group having no hydrogen atom at the beta-position thereof or an alkyl group substituted with one or more halogen atoms having no hydrogen atom at the beta-position thereof, with the proviso that R3 is not identical to R4, which has excellent properties as solvent, is disclosed. A non-aqueous electrolytic solution and a battery utilizing the novel carbonate compound are also disclosed.

5635138

APPARATUS FOR IN SITU X-RAY STUDY OF ELECTROCHEMICAL CELLS

Amatucci Glenn G; Tarascon Jean-Marie Raritan, NJ, UNITED STATES assigned to Bell Communications Research Inc

An apparatus and method for monitoring structural changes of an electrode in a rechargeable battery include an in situ x-ray study electrochemical cell holder comprising top and bottom cell holder members including at least one beryllium window element for transmission of diffractometer x-radiation. A rechargeable battery cell mounted within the x-ray cell holder enclosure comprises an electrolyte/separator element interposed between positive and negative electrodes. A current collector element formed of an electrically-conductive open-mesh grid is disposed between the positive electrode and the separator to enable ion-conducting contact of the electrode and separator while maintaining electrical continuity between the electrode and an external x-ray cell holder terminal. As a result of this arrangement, the positive electrode need not contact the window element to establish an electrical battery circuit, but may be sufficiently spaced from the window to avoid electrolytic corrosion of the beryllium element. The in situ x-ray electrochemical cell holder and battery cell structure allow for continuous monitoring of the structural changes in electrode materials during charge/discharge cycling.

5636437

FABRICATING SOLID CARBON POROUS ELECTRODES FROM POWDERS

Kaschmitter James L; Tran Tri D; Feikert John H; Mayer Steven T Pleasanton, CA, UNITED STATES assigned to Regents of the University of California

Fabrication of conductive solid porous carbon electrodes for use in batteries, double layer capacitors, fuel cells, capacitive dionization, and waste treatment. Electrodes fabricated from low surface area (<50 m2/gm) graphite and cokes exhibit excellent reversible lithium intercalation characteristics, making them ideal for use as anodes in high voltage lithium insertion (lithium-ion) batteries. Electrodes having a higher surface area, fabricated from powdered carbon blacks, such as carbon aerogel powder, carbon aerogel microspheres, activated carbons, etc. yield high conductivity carbon compositives with excellent double layer capacity, and can be used in double layer capacitors, or for capacitive deionization and/or waste treatment of liquid streams. By adding metallic catalysts to be high surface area carbons, fuel cell electrodes can be produced.

5639437

OXYGEN ION-CONDUCTING DENSE CERAMIC

Balachandran Uthamalingam; Kleefisch Mark S; Kobylinski Thaddeus P; Morissette Sherry; Pei Shiyou Hinsdale, IL, UNITED STATES assigned to Amoco Corporation

Preparation, structure, and properties of mixed metal oxide compositions containing at least strontium, cobalt, iron and oxygen are described. The crystalline mixed metal oxide compositions of this invention have, for example, structure represented by (*See Patent for Tabular Presentation*) PS where x is a number in a range from 0.01 to about 1, alpha is a number in a range from about 1 to about 4, beta is a number in a range upward from 0 to about 20, and delta is a number which renders the compound charge neutral, and wherein the composition has a non-perovskite structure. Use of the mixed metal oxides in dense ceramic membranes which exhibit oxygen ionic conductivity and selective oxygen separation, are described as well as their use in separation of oxygen from an oxygen-containing gaseous mixture.

5639438

LITHIUM MANGANESE OXIDE COMPOUND AND METHOD OF PREPARATION

Ellgen Paul C Oklahoma City, OK, UNITED STATES assigned to Kerr-McGee Chemical Corporation

A method for manufacturing Li2MbMn2-bO4 which comprises the steps of providing LiMbMn2-bO4; providing a lithium salt; forming a mixture of the LiMbMn2-bO4 and lithium salt in a liquid medium; adding a reducing agent to the mixture; heating for sufficient time to effect substantially complete conversion; and separating the product Li2MbMn2-bO4.