(12) **United States Patent**
Rokhvarger et al.

(10) **Patent No.:** **US 8,197,565 B2**
(45) **Date of Patent:** **Jun. 12, 2012**

(54) **SYSTEM OF THE CHEMICAL ENGINEERING PROCESSES GENERATING ENERGY AND UTILIZING MUNICIPAL SOLID WASTE OR A CARBON CONTENT MATERIAL MIXTURE**

(76) Inventors: **Anatoliy Rokhvarger**, Brooklyn, NY (US); **Vladimir Boyko**, Brooklyn, NY (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 976 days.

(21) Appl. No.: **12/059,430**

(22) Filed: **Mar. 31, 2008**

(65) **Prior Publication Data**

US 2009/0241420 A1   Oct. 1, 2009

(51) **Int. Cl.**

B01J 7/00	(2006.01)
C01B 3/36	(2006.01)
C01B 6/24	(2006.01)
C01B 3/02	(2006.01)
C10K 3/06	(2006.01)
C10J 3/00	(2006.01)

(52) **U.S. Cl.** .... **48/197 R**; 48/61; 48/202; 48/210; 423/644; 423/648.1

(58) **Field of Classification Search** .... 48/197 R, 48/61, 202, 210; 423/644
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2002/0113228 A1*	8/2002	Kim et al.	....	252/373
2005/0032920 A1*	2/2005	Norbeck et al.	....	518/704

* cited by examiner

Primary Examiner — Matthew Merkling

(74) *Attorney, Agent, or Firm* — Anna Vishev, Esq.

(57) **ABSTRACT**

A system of the interrelated chemical engineering processes that continuously and simultaneously gasify and utilize of an organic-inorganic raw material or municipal solid waste (MSW) and completely or entirely decompose and transform said raw material, synthesize synthetic gas (syngas) and water steam gas mixture, and melt inorganic materials that are made further treatment and correspondingly processed into following consumable and fully marketable materials or products: syngas fuel, electricity, methanol or gasoline, chemical materials, glassy slag and concrete/road filling materials, multi-metal alloy and cast metal goods, greenhouse made green mass, and hot water; said system of chemical engineering processes does not need or use fossil fuel and electric power supplied from external sources; and said system of processes excludes an emission of nitrogen oxide, carcinogenic, and hazardous gases, and air pollutant particles, excludes production of ash or secondhand waste, and makes unsubstantial a carbon dioxide emission.

14 Claims, 2 Drawing Sheets

Figure 1