



US008114365B2

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

(10) **Patent No.:** **US 8,114,365 B2**

(45) **Date of Patent:** **\*Feb. 14, 2012**

(54) **SILICA REMOVAL FROM PREGNANT LEACH SOLUTIONS**

(52) **U.S. Cl.** ..... 423/34; 75/330

(58) **Field of Classification Search** ..... None  
See application file for complete search history.

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(56) **References Cited**

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\* cited by examiner

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(\* ) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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This patent is subject to a terminal disclaimer.

(57) **ABSTRACT**

The present invention relates generally to a process for removing dissolved or colloidal silica from a pregnant leach solution ("PLS"). More particularly, an exemplary embodiment of the present invention relates to a process which mixes PLS with an acid source, preferably lean electrolyte, to induce formation of colloidal silica that can then be collected and removed. Additionally, in an exemplary embodiment of the present invention, at least one silica seeding agent is added to induce formation of colloidal silica, at least one flocculant is added to induce aggregation of the colloidal silica, and a solid-liquid separation process is utilized to remove advantageous amounts or substantially all of the colloidal silica, thereby providing relief from supersaturation of dissolved silica in the metal recovery processes.

(21) Appl. No.: **12/718,796**

(22) Filed: **Mar. 5, 2010**

(65) **Prior Publication Data**

US 2011/0000337 A1 Jan. 6, 2011

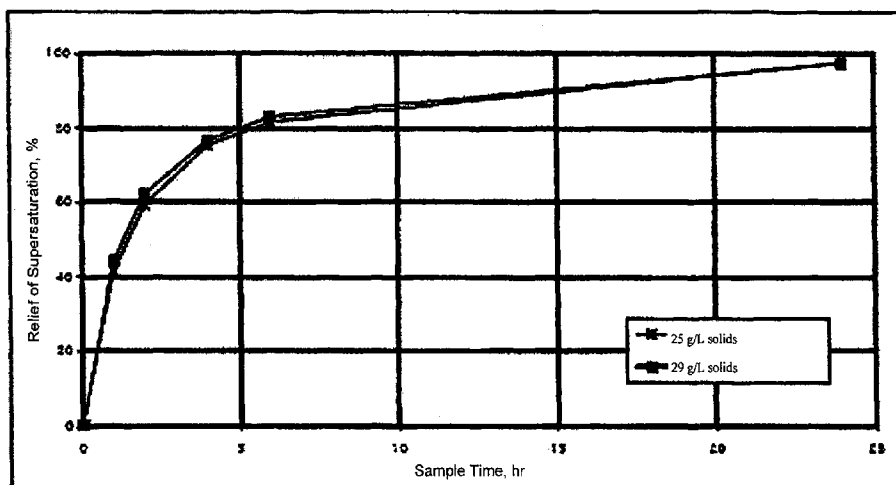
**Related U.S. Application Data**

(63) Continuation of application No. 11/857,941, filed on Sep. 19, 2007, now Pat. No. 7,691,347.

(51) **Int. Cl.**  
**C22B 3/20** (2006.01)

**20 Claims, 7 Drawing Sheets**

RELIEF FROM SUPERSATURATION USING GALACTOSOL-CIBA-SILICA SEEDING AGENT



Note: 45 mg/L Si equilibrium concentration assumed; no PEO treatment