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(54) Title (EN): SYSTEMS AND METHODS FOR DETECTION OF MERCURY IN HYDROCARBON-CONTAINING FLUIDS USING OPTICAL ANALYSIS OF SLUG FLOW

(54) Title (FR): SYSTÈMES ET PROCÉDÉS DE DÉTECTION DE MERCURE DANS DES FLUIDES CONTENANT DES HYDROCARBURES À L'AIDE D'UNE ANALYSE OPTIQUE D'ÉCOULEMENT À BOUCHONS

(57) Abstract:

(EN): A method and system for detecting mercury in a hydrocarbon-containing fluid stores a sample of the hydrocarbon-containing fluid in a first reservoir. A liquid phase reagent solution is stored in a second reservoir. The liquid phase reagent solution includes nanoparticles with an affinity to mercury, wherein the nanoparticles are suspended as a colloid in the liquid phase reagent solution. The sample of the hydrocarbon-containing fluid is delivered from the first reservoir into a first port of a fluidic device while the liquid phase reagent solution is delivered from the second reservoir into a second port of the fluidic device such that the fluidic device produces slug flow. The slug flow is subject to optical analysis that determines concentration of mercury in the sample of the hydrocarbon-containing fluid.

(FR): L'invention concerne un procédé et un système de détection de mercure dans un fluide contenant des hydrocarbures : un échantillon du fluide contenant des hydrocarbures est stocké dans un premier réservoir. Une solution de réactif en phase liquide est stockée dans un second réservoir. La solution de réactif en phase liquide comprend des nanoparticules ayant une affinité

pour le mercure, les nanoparticules étant en suspension sous la forme d'un colloïde dans la solution de réactif en phase liquide. L'échantillon du fluide contenant des hydrocarbures est distribué du premier réservoir dans un premier orifice d'un dispositif fluïdique tandis que la solution de réactif en phase liquide est distribuée du second réservoir dans un second orifice du dispositif fluïdique de telle sorte que le dispositif fluïdique produit un écoulement à bouchons. L'écoulement à bouchons est soumis à une analyse optique qui détermine la concentration de mercure dans l'échantillon du fluide contenant des hydrocarbures.

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