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CHEVRON U.S.A., INC. [US/US]; P.O. Box 6006, San Ramon, CA 94583 (US). **LOS ALAMOS NATIONAL SECURITY** [US/US]; P.O. Box 1663, Los Alamos, NM 87544 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **VU, Cung, Khac** [US/US]; 2811 Lafayette Street, Houston, TX 77005 (US). **SINHA, Dipen, N.** [US/US]; 112 Shirlane Place, Los Alamos, NM 87544 (US). **PANTEA, Cristian** [US/US]; 2060 A 41 St., Los Alamos, NM 87544 (US). **NIHEI, Kurt** [US/US]; 5839 Army Drive, Oakland, CA 95618 (US). **SCHMITT, Denis, P.** [US/US]; 3903 S. Mason Rd. #1131, Katy, TX 77450 (US). **SKELT,**

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(54) Title: DEVICE AND METHOD FOR GENERATING A BEAM OF ACOUSTIC ENERGY FROM A BOREHOLE, AND APPLICATIONS THEREOF

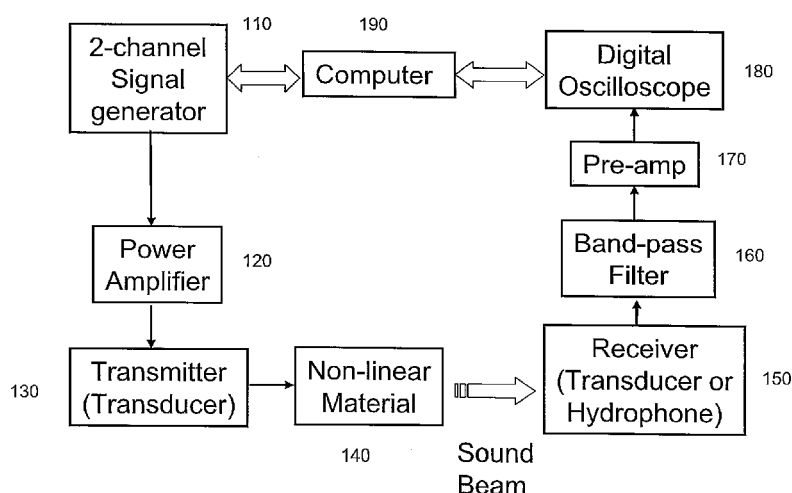


Fig. 1

(57) Abstract: A device, positioned within a well bore, configured to generate and direct an acoustic beam into a rock formation around a borehole is disclosed. The device comprises a source configured to generate a first signal at a first frequency and a second signal at a second frequency; a transducer configured to receive the generated first and the second signals and produce acoustic waves at the first frequency and the second frequency; and a non-linear material, coupled to the transducer, configured to generate a collimated beam with a frequency equal to the difference between the first frequency and the second frequency by a non-linear mixing process, wherein the non-linear material includes one or more of a mixture of liquids, a solid, a granular material, embedded microspheres, or an emulsion.



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