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- (71) Applicant (for all designated States except US): **PASS-PORT SYSTEMS, INC.** [US/US]; 70 Treble Cove Road, Billerica, MA 01862 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **BERTOZZI, William** [US/US]; 8 Castle Road, Lexington, MA 02420 (US). **LEDOUX, Robert, J.** [US/US]; 70 Treble Cove Road, Billerica, MA 01862 (US).
- (74) Agents: **DEUTSCH, Stephen, B.** et al.; Foley Hoag, Llp, Patent Group, 155 Seaport Boulevard, Boston, MA 02210-2600 (US).

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(54) Title: METHODS AND APPARATUS FOR THE IDENTIFICATION OF MATERIALS USING PHOTONS SCATTERED FROM THE NUCLEAR "PYGMY RESONANCE"

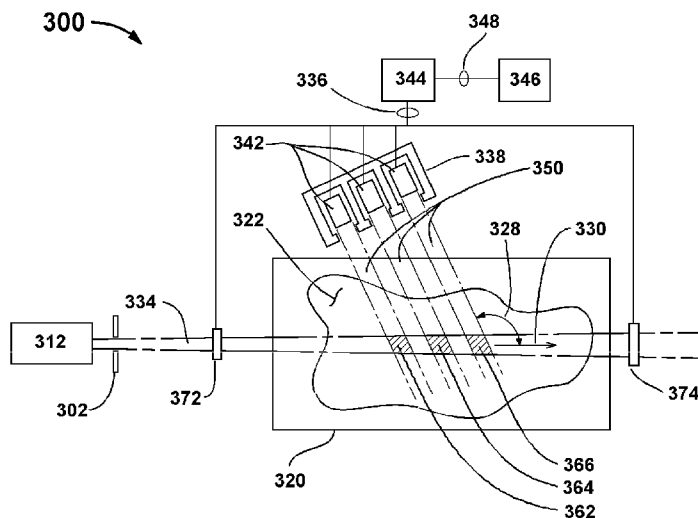


Figure 3: Schematic layout of some embodiments

(57) Abstract: The scattered intensity of photons from the nuclear Pygmy Resonance taken in conjunction with the scattered intensity at lower energies provides a signal that is sensitive to the nature of the nuclear species doing the scattering. Highly enriched uranium and depleted uranium can be distinguished by this signal from other materials. Other nuclei can also be distinguished and identified. Methods and apparatus for employing the phenomenon to identify or assist in the identification of materials are disclosed.

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INTERNATIONAL SEARCH REPORT

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A. CLASSIFICATION OF SUBJECT MATTER IPC(8) - G01J 3/40 (2009.01) USPC - 356/303 According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) USPC: 353/303		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched USPC: 250/307, 308, 363.01, 389-391; 356/300, 303, 337		
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) PubWEST(USPT,PGPB,EPAB,JPAB); Google Scholar, DialogWeb (DB: 344, 347, 348, 349, 351, 371, 654) Search Terms: collimate, electron beam, nuclear resonance, detector, angle, scatter, energy, range, photon, bremsstrahlung beam, pygmy resonance, illuminate, target		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2006/0188060 A1 (BERTOZZI et al.) 24 August 2006 (24.08.2006), entire document, especially; FIG. 9, para [0027]-[0033], [0042]-[0047], [0049], [0057], [0061], [0062], [0072], [0085], [0092].	1-9
Y	Electric Dipole Strength Below the Giant Dipole Resonance, (J. ENDERS et al.), April 2005, Acta Physica Polonica B, vol. 36, Issue 4, p.1077, entire document, especially; pg 1077 and 1078.	1-9
A	US 2002/0015473 A1 (HERTZ et al.) 07 February 2002 (07.02.2002), entire document.	1-9
A	US 7,092,485 B2 (KRAVIS) 15 August 2006 (15.08.2006), entire document.	1-9
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