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(54) Method and apparatus for sampling a plasma into a vacuum chamber.

(57) A plasma (24) is generated within an induction coil (12) and the plasma is sampled through an orifice (30) into a vacuum chamber (28) for mass analysis of trace ions in the plasma. Arcing at the orifice is prevented by grounding the induction coil at or near its centre, thus eliminating ultra-violet noise and reducing average ion energies and ion energy spread, as well as preventing destruction of the orifice. The elimination of arcing at the orifice allows the use of a sharp edge orifice structure (92) to prevent formation of a cool boundary layer over the orifice and also permits direct sampling of the plasma. The direct sampling and the lack of cooling prevent recombination and reaction of the ions with oxygen and improve the response to elements of high ionization potential, increasing the desired ion signal and greatly reducing the presence of oxides which would otherwise complicate the spectrum.

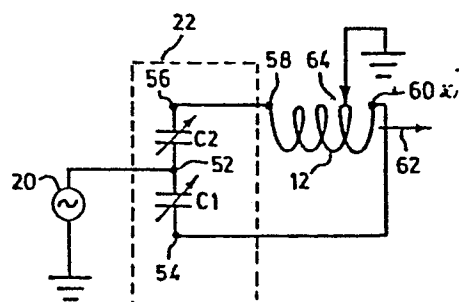


FIG. 3

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DOCUMENTS CONSIDERED TO BE RELEVANT															
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl. ³)												
A	FR-A-1 471 211 (SOCIETE NATIONALE DES PETROLES D'AQUITAINE) * Figures 1-3 *	1,2,16	H 01 J 49/04												
A	US-A-2 831 134 (O. REIFENSCHWEILER) * Column 1, lines 1-36; figure 7 * -----	1,2,16													
			TECHNICAL FIELDS SEARCHED (Int. Cl. ³)												
			H 01 J H 05 H												
The present search report has been drawn up for all claims															
Place of search THE HAGUE		Date of completion of the search 26-06-1985	Examiner GALANTI M.												
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