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(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2007/0179263 A1****Koh et al.**(43) **Pub. Date: Aug. 2, 2007**(54) **FUNCTIONAL MATERIAL COMPRISING
FLUORINE-CONTAINING COMPOUND****Publication Classification**(75) Inventors: **Meiten Koh**, Osaka (JP); **Mamoru Miyata**, Osaka (JP); **Takayuki Araki**, Osaka (JP)(51) **Int. Cl.**
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WASHINGTON, DC 20037 (US)(57) **ABSTRACT**

There is provided an ionic liquid type functional material which is useful for a lubricant, acid-removing agent, various ionic liquid materials, electrolyte for solar cell and actuator material. The ionic liquid type functional material contains an aromatic compound which has a fluorine-containing ether chain and is represented by the formula (1):

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wherein -D- is a fluoroether unit represented by the formula (1-1):

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Jun. 11, 2004 (JP) 2004-174434in which R is at least one selected from divalent fluorine-containing alkylene groups having 1 to 5 carbon atoms in which at least one of hydrogen atoms is replaced by fluorine atom; n is an integer of from 1 to 20; when m is not less than 2, two or more of D may be the same or different; Ra is a monovalent organic group which has 1 to 20 carbon atoms and does not contain D; when m is not less than 2, two or more of Ra may be the same or different; m is an integer of from 1 to 4; Ry is a mono-, di-, tri- or tetra-valent organic group having 2 to 30 carbon atoms which has at least one selected from a basic functional group Y¹ and/or a salt Y² of the basic functional group and contains an aromatic ring structure, provided that a unit of —O—O— is not contained in the formulae (1) and (1-1).