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(71) Applicant (for all designated States except US):

CELANESE INTERNATIONAL CORPORATION
 [US/US]; 1601 West LBJ Freeway, Dallas, TX 75234 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **JOHNSTON, Victor, J.** [US/US]; 3234 Pleasant Cove Court, Houston, TX 77059 (US). **CHEN, Laiyuan** [CN/US]; 4223 Pine Blossom Trail, Houston, TX 77059 (US). **KIMMICH, Barbara, F.** [US/US]; 82B Anderson Hill Road, Bernardsville, NJ 07924 (US). **CHAPMAN, Josefina, T.** [US/US]; 15427 Rocky Oak Court, Houston, TX 77059 (US). **ZINK, James, H.** [US/US]; 3219 Ivory Point Drive, League City, TX 77575 (US). **WEINER, Heiko** [DE/US]; 4827 Baywood Drive, Pasadena, TX 77059 (US). **POTTS, John, L.** [US/US]; 1088 Red Elm Lane,

Angleton, TX 77515 (US). **JEVTIC, Radmila** [RS/US]; 4300 Bay Area Blvd., Apt. #1324, Houston, TX 77058 (US).

(74) Agents: **KRIEGER, Justin L.** et al.; Katten Muchin Rosenman LLP, 2900 K Street, NW, Suite 200, Washington, DC 20007-5118 (US).

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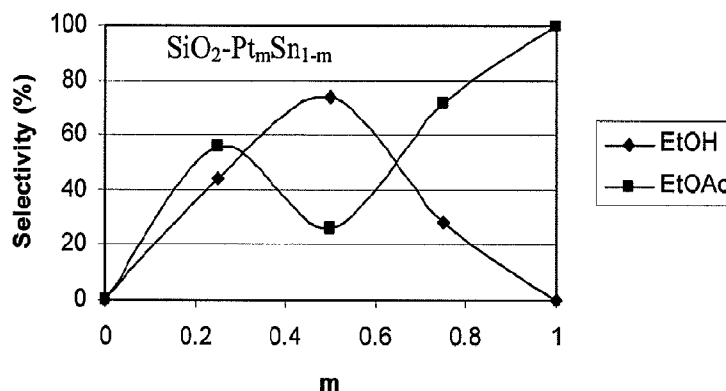
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(54) Title: CATALYSTS FOR MAKING ETHANOL FROM ACETIC ACID

FIG. 1A - Selectivity Pt/Sn Catalyst



(57) Abstract: Catalysts and processes for forming catalysts for use in hydrogenating acetic acid to form ethanol. In one embodiment, the catalyst comprises a first metal, a siliceous support, and at least one metasilicate support modifier. Preferably, the first metal is selected from the group consisting of copper, iron, cobalt, nickel, ruthenium, rhodium, palladium, osmium, iridium, platinum, titanium, zinc, chromium, rhenium, molybdenum, and tungsten. In addition the catalyst may comprise a second metal preferably selected from the group consisting of copper, molybdenum, tin, chromium, iron, cobalt, vanadium, tungsten, palladium, platinum, lanthanum, cerium, manganese, ruthenium, rhenium, gold, and nickel.