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(71) Applicant: **ROHM AND HAAS COMPANY** [US/US];
400 Arcola Road, Collegeville, Pennsylvania 19426 (US).

(72) Inventors: **DEWILDE, Joseph F.**; 400 Arcola Road, Col-
legeville, Pennsylvania 19426 (US). **LIMBACH, Kirk**
W.; 400 Arcola Road, Collegeville, Pennsylvania 19426
(US). **CHAKRABARTI, Reetam**; 400 Arcola Road, Col-
legeville, Pennsylvania 19426 (US).

(74) Agent: **MUTSCHLER, Brian**; The Dow Chemical Com-
pany, Intellectual Property, P.O. Box 1967, Midland, Michi-
gan 48641-1967 (US).

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(54) Title: INTEGRATED CARBOXYLIC ACID PRODUCTION FROM SYNTHESIS GAS

(57) Abstract: A process for preparing C₂ to C₄ carboxylic acids from synthesis gas includes introducing a feed stream comprising hydrogen gas and a carbon-containing gas comprising carbon monoxide into a reaction zone of a first reactor, converting the feed stream into an intermediate stream comprising C₂ to C₄ hydrocarbons in the reaction zone in the presence of a first catalyst, wherein the intermediate stream further comprises carbon dioxide and wherein the first catalyst is a composite catalyst comprising a metal oxide catalyst component and a microporous catalyst component, and converting the intermediate stream into a product stream comprising C₂ to C₄ carboxylic acids in the presence of a second catalyst in a second reactor. The second reactor can be configured for olefin oxidation or paraffin oxidation.