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(54) Title: MICROBIAL PROCESS FOR THE PREPARATION OF ACETIC ACID AS WELL AS SOLVENT FOR ITS EXTRACTION FROM THE FERMENTATION BROTH (57) Abstract A modified water-immiscible solvent useful in the extraction of acetic acid from aqueous streams is a substantially pure mixture of isomers of highly branched di-alkyl amines. This solvent is substantially devoid of mono-alkyl amines and alcohols. Solvent mixtures formed of such a modified solvent with a desired cosolvent, preferably a low boiling hydrocarbon which forms an azeotrope with water are useful in the extraction of acetic acid from aqueous gaseous streams. An anaerobic microbial fermentation process for the production of acetic acid employs such solvents, under conditions which limit amide formation by the solvent and thus increase the efficiency of acetic acid recovery. Methods for the direct extraction of acetic acid and the extractive fermentation of acetic acid also employ the modified solvents and increase efficiency of acetic acid production. Such increases in efficiency are also obtained where the energy source for the microbial fermentation contains carbon dioxide and the method includes a carbon dioxide stripping step prior to extraction of acetic acid in solvent.		