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# Amphoteric amylopectin – A novel flocculant

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## Abstract

Novel flocculants for wastewater and industrial effluents treatment have been developed in author laboratory based on polyacrylamide grafted polysaccharides1. These flocculants have unique characteristics i.e. they are efficient with low dose usage like polyacrylamides and controlled biodegradable, shear resistant and inexpensive like polysaccharides. Their synergistic performance has been explained by easy approachability of dangling polyacrylamide branches on rigid polysaccharide backbones to contaminants. As contaminants have varying iconicity, various kinds of nonionic, anionic and cationic flocculants have been developed by hydrolysis and cationization of grafted polysaccharides in authors' laboratory. Amphoteric flocculants have anionic and cationic moieties on the same macromolecule and can be used to remove both positively charged and high negatively charged contaminants in suspensions.

Amylopectin based flocculants have been found to be highly efficient flocculant and hence amylopectin has been chosen as base polysaccharide. By grafting and hydrolysis first, anionic moiety has been installed on amylopectin then a cationic moiety has been chemically loaded on anionic amylopectin both by chemical / microwave processing. The flocculation efficiency of the amphoteric amylopectin has been tested in kaolin and iron ore suspensions. The results indicate its high efficiency in comparison with anionic, grafted and base amylopectin. Microwave processing yields better amphoteric flocculants. All the systems have been characterized by materials characterization techniques. The lecture will provide details of materials, mechanisms and applications.

## Biography

Prof. R.P. Singh has made outstanding contributions in Polymer Science and Engineering, Ultrasonics and Rheology especially in the fields of Turbulent Drag Reducing and Flocculating Polymers, Multiphase Polymeric Systems, Plastics Packaging and Molecular Ultrasonics. His work is internationally recognized as evidenced by invitations to major national and international meetings, involvement in international collaborative research with leading renowned scientists and frequent citations in international literature.