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(54) Title: ACTIVITY MONITORING AND POLYMERIZATION PROCESS CONTROL

(57) Abstract: The present invention relates to a method to control a liquid feed stream carried out by measuring at least one spectrum of the liquid feed stream comprising an initiator or catalyst, determining its activity using a predictive model on the basis of said spectrum and adjusting the feed streams and/or the preparation conditions of the feed stream comprising the initiators or catalysts in order to attain or maintain a desired level of total activity. In a further aspect the invention relates to a controlled process for the preparation of polymers in a polymerization reactor by contacting liquid feed streams comprising monomers and initiators or catalysts, whereby the control of the feed streams entering the polymerization reactor and/ or the initiator or catalyst preparation is carried out by measuring at least one spectrum of the liquid feed stream comprising an initiator or catalyst, determining its activity using a predictive model on the basis of said spectrum and adjusting the feed streams and/or the preparation conditions of the feed stream comprising the initiators or catalysts in order to attain or maintain a desired level of total activity within the polymerization reactor. More particularly, the invention relates to a method for controlling the activity of aluminium containing initiators in a process for the co-polymerisation of isolefins and multiolefins, in particular isobutylene and isoprene. The present invention further to device and a chemical plant suitable to operate said process.

