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(71) Applicant *(for all designated States except US)*: **SHELL INTERNATIONALE RESEARCH MAATSCHAPPIJ B.V.** [NL/NL]; Carel Van Bylandtlaan 30, NL-2596 HR The Hague (NL).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **DE BOER, Eric Johannes Maria** [NL/NL]; Badhuisweg 3, NL-1031 CM Amsterdam (NL). **VAN DER HEIJDEN, Harry** [NL/NL]; Badhuisweg 3, NL-1031 CM Amsterdam (NL). **ON, Quoc An** [NL/NL]; Badhuisweg 3, NL-1031 CM Amsterdam (NL). **SMIT, Johan Paul** [NL/NL]; Badhuisweg 3, NL-1031 CM Amsterdam (NL). **VAN ZON, Arie** [NL/NL]; Badhuisweg 3, NL-1031 CM Amsterdam (NL).

(74) Agent: **ZEESTRATEN, Albertus Wilhelmus Joannes**; C30, PO BOX 384, NL-2501 CJ The Hague (NL).

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(54) **Title:** CATALYTIC TRIMERIZATION AND TETRAMERIZATION OF OLEFINIC MONOMERS

(57) **Abstract:** A catalyst precursor composition comprising: a) a source of chromium, molybdenum or tungsten; b) a first ligand having the general formula (I) ; $(R^1)(R^2)$ P-X-P$(R^3)(R^4)$ (I), wherein: X is a bivalent organic bridging group; $R^1$ and $R^3$ are independently selected from, hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl and substituted heterohydrocarbyl groups, with the proviso that when $R^1$ and $R^3$ are aromatic groups they do not contain a polar substituent at any of the ortho-positions; $R^2$ and $R^4$ are independently selected from optionally substituted aromatic groups, each $R^2$ and $R^4$ bearing a polar substituent on at least one of the ortho-positions; and c) a second ligand having the general formula (II) ; $(R^{1'})(R^{2'})$P-X'-P$(R^{3'})(R^{4'})$ (II), wherein: X' is a bridging group of the formula -N$(R^{5'})$-, wherein $R^{5'}$ is selected from hydrogen, a hydrocarbyl group, a substituted hydrocarbyl group, a heterohydrocarbyl group, a substituted heterohydrocarbyl group, a silyl group or derivative thereof; and $R^{1'}$, $R^{2'}$, $R^{3'}$ and $R^{4'}$ are independently selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl and substituted heterohydrocarbyl groups of which at least one of $R^{1'}$, $R^{2'}$, $R^{3'}$ and $R^{4'}$ is substituted with a polar substituent, or $R^{1'}$, $R^{2'}$, $R^{3'}$ and $R^{4'}$ are independently selected from hydrocarbyl, substituted hydrocarbyl, heterohydrocarbyl and substituted heterohydrocarbyl groups, wherein any substituents on one or more of $R^{1'}$, $R^{2'}$, $R^{3'}$ and $R^{4'}$ are non-polar. The present invention also relates to a catalyst system comprising the catalyst precursor composition of the present invention and additional component; d) a cocatalyst. The present invention further relates to a process for the trimerization and tetramerization of olefinic monomers, particularly the trimerization and tetramerization of ethylene to 1-hexene and 1-octene, wherein the process comprises contacting at least one olefinic monomer with the catalyst system of the present invention.

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