

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : C07D 201/12	A1	(11) International Publication Number: WO 97/03048 (43) International Publication Date: 30 January 1997 (30.01.97)
(21) International Application Number: PCT/NL96/00283 (22) International Filing Date: 11 July 1996 (11.07.96) (30) Priority Data: 1000781 12 July 1995 (12.07.95) NL (71) Applicant (for all designated States except US): DSM N.V. [NL/NL]; Het Overloon 1, NL-6411 TE Heerlen (NL). (72) Inventors; and (75) Inventors/Applicants (for US only): FRENTZEN, Yvonne, He- lene [NL/NL]; Averbodestraat 74, NL-5921 ES Venlo (NL). THIJERT, Marcellinus, Plechelmus, Gerhardus [NL/NL]; Heggenhof 7, NL-6132 SP Sittard (NL). ZWART, Rudolf, Lambertus [NL/NL]; Mairestraat 4, NL-6151 GZ Mun- stergeleen (NL). (74) Agent: GEERTS, Johanna, Adriana, Maria; Octrooibureau DSM, P.O. Box 9, NL-6160 MA Geleen (NL).		(81) Designated States: CA, CN, JP, KR, MX, SG, US, European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>
(54) Title: PROCESS FOR THE RECOVERY OF CAPROLACTAM FROM WASTE CONTAINING NYLON BY EXTRACTION WITH ALKYL PHENOLS (57) Abstract A process for depolymerizing nylon (6) and recovering caprolactam from the depolymerized products by extraction with alkyl phenolic compounds. Process steps include (a) treating a first mixture comprising nylon (6) with water at a temperature between about 200 °C and about 400 °C to yield a second mixture comprising depolymerized nylon (6) components, wherein the second mixture contains caprolactam at a concentration between about 5 wt.% and about 35 wt.%; (b) optionally, separating insoluble material from the second mixture; (c) extracting the second mixture with an extraction agent to yield an aqueous raffinate third mixture and an organic phase fourth mixture comprising caprolactam and the extraction agent, wherein the extraction agent is an alkyl phenol having a boiling point higher than that of the caprolactam; (d) recovering caprolactam from the organic phase fourth mixture by distillation; (e) recycling the aqueous raffinate third mixture to step (a).		