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Title: EDC/DMAP-mediated direct condensation of dicarboxylic acids and diols: A concise synthesis of extra large polyether macrocyclic lactones and their X-ray structures

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Abstract: We report the EDC/DMAP-mediated direct condensation reactions of dicarboxylic acids with diols and synthesis of new classes of 18-48-membered, small and extra-large polyether macrocyclic lactones. The methodology was executed by using various dicarboxylic acids linked via aliphatic, polyether and aromatic linkers and different diols (e.g., (Z)-but-2-ene-1,4-diol, but-2-yne-1,4-diol, 2,2'-thiobis(ethan-1-ol), 2,2'-(benzylazanediyl)bis(ethan-1-ol), 2,2'-oxybis(ethan-1-ol)). The condensation reactions of dicarboxylic acids with diols afforded 1:1 (18-24-membered) and 2:2 (36-48-membered) polyether macrocyclic lactones. The synthesis of small and extra-large polyether macrocyclic lactones was accomplished without using a template and relatively simple reaction conditions. All the reported macrocyclic lactones were separated by column chromatography and characterized by ¹H, ¹³C NMR and HRMS analyses. The solid state (X-ray) structures of representative polyether macrocyclic lactones were also reported.

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