

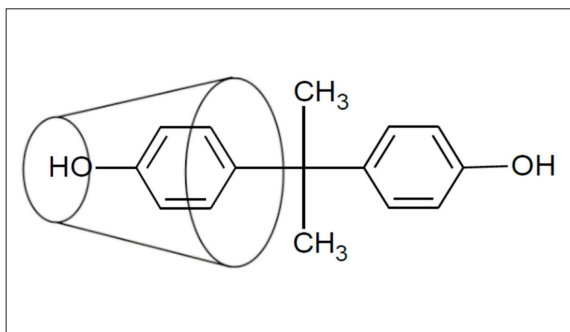


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Subject Area	Wasseraufbereitung
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Enhanced photodegradation of aromatic compounds

Bachelor Thesis

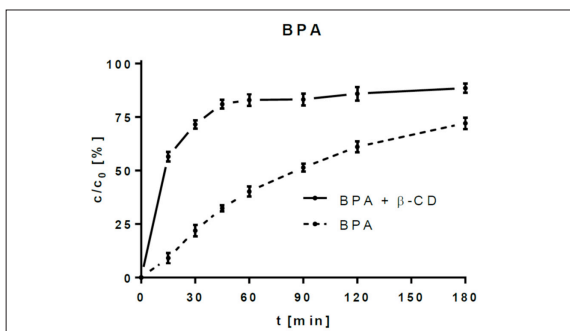


Host/guest complex with bisphenol A and cyclodextrin (cup)

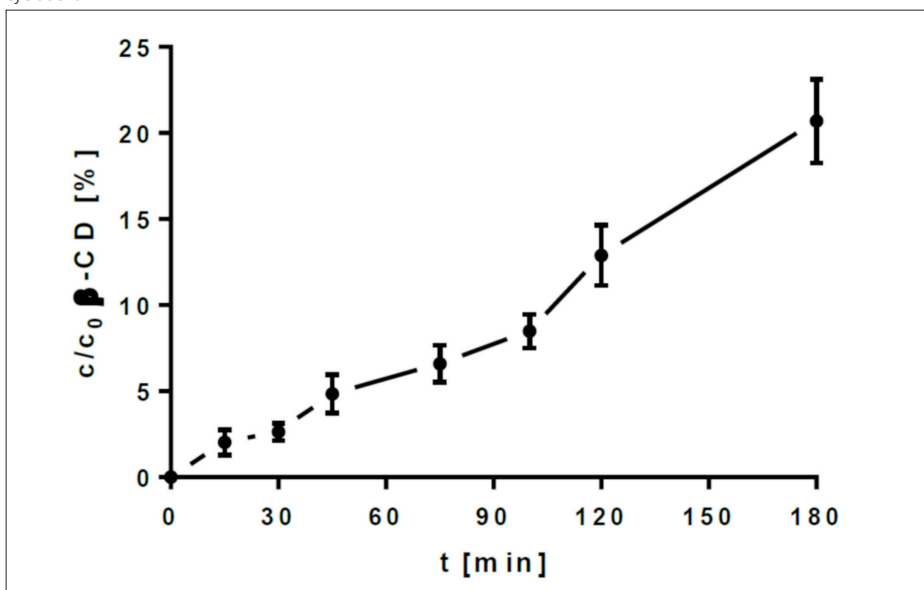
Introduction: Bisphenol A is widely used as a primary raw material in the production of polycarbonate plastics and epoxy resins. The final products are used as coatings on cans or antioxidants in plastics. Cyclodextrins (CDs) possess a shape similar to a drinking cup. This special molecular structure allows them to form host/guest inclusion complexes with various guest molecules of suitable polarity and dimensions. CDs have extensively proven their potential as media for controlling chemical and photochemical reactions.

Approach/Technologies: The efficiency of the photodegradation of bisphenol A in the presence of cyclodextrin has been studied under variable experimental conditions such as initial concentrations or pH. Additional methods such as ultrasonic treatment, temperature or additional substances in order to enhance the photodegradation efficiency have also been investigated.

Solution: Cyclodextrin can be used to enhance the photodegradation of organic compounds which show a higher photodegradability in the presence of cyclodextrin.



Removal efficiency of bisphenol A with and without beta-cyclodextrin. The removal efficiency is clearly enhanced in the presence of beta-cyclodextrin



The removal efficiency of beta-cyclodextrin itself is very low. Therefore the costs to remove the beta-cyclodextrin from water by UV are immense