

论文

## 两亲性二嵌段共聚物MPEG<sub>44</sub>-*b*-Phe的合成及其在水溶液中的自组装

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**摘要** 利用光气法,以三光气和苯丙氨酸为原料,合成了苯丙氨酸酸酐(*b*-Phe-NCA).用端氨基聚乙二醇单甲醚(MPEG-NH<sub>2</sub>)作大分子引发剂,引发*b*-Phe-NCA开环聚合,合成了不同分子量的聚乙二醇单甲醚-聚(*L*-苯丙氨酸)(MPEG<sub>44</sub>-*b*-Phe)AB型二嵌段共聚多肽.利用IR、<sup>1</sup>H-NMR、GPC对共聚物结构进行了表征.利用TEM研究了二嵌段共聚多肽MPEG<sub>44</sub>-*b*-Phe<sub>50</sub>及MPEG<sub>44</sub>-*b*-Phe<sub>7</sub>在水溶液中的自组装形态,结果表明合成出的两亲性二嵌段共聚物在水溶液中自组装形成胶束,随着嵌段共聚物中亲水嵌段含量的增高,共聚物溶水性增强,其在水溶液中的自组装形态更加均一.

**关键词** [聚乙二醇单甲醚](#) [苯丙氨酸](#) [嵌段共聚物](#) [自组装](#)

分类号

## SYNTHESIS OF AMPHIPHILIC DIBLOCK COPOLYMERS MPEG-*b*-Phe AND THEIR SELF-ASSEMBLY IN WATER

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**Abstract** Poly(ethyl glycol)-*b*-poly(*L*-phenylalanine)AB diblock copolypeptides(MPEG<sub>44</sub>-*b*-Phe<sub>50</sub> and MPEG<sub>44</sub>-*b*-Phe<sub>7</sub>)were synthesized from Phe-NCA monomer by using  $\alpha$ -methoxy- $\omega$ -2-aminoethyl-poly(ethylene glycol)(MPEG-NH<sub>2</sub>)as the initiator. *L*-phenylalanine *N*-carboxyanhydride(*b*-Phe-NCA)was prepared with the phosgene method (Fuehs-Farthing method),through the reaction of amino acids and triphosgene. The macromoleculas initiator,amino-terminated(MPEG-NH<sub>2</sub>)was prepared by convening the end group of hydroxyl to amino group. The structure of these copolymers were characterized by means of FTIR、<sup>1</sup>H-NMR and GPC. The results of these experiments pmvided direct evidence of the formation of the block copolymers. Self-assembled structures of the synthesized diblock copolymers in water were prepared by the dialysis method and the morphologies of the aggregates were investigated by TEM. The results proved that these amphiphilic diblock copolymers Can self-assemble into micelles in water.

**Key words** [Methoxy polyethylene glycol](#) [Phenylalanine](#) [Block copolymer](#) [Self-assembly](#)

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