

聚乙二醇、聚丙烯醇和环氧乙烷-环氧丙烷嵌段共聚物在固-液界面上的吸附 III:硅烷化活性炭/水和甲基化硅胶/水界面

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 测定了25℃时硅烷化不同时间(1至30天)的活性炭及甲基化硅胶自水溶液中吸附四种聚乙二醇(PEG)、三种聚丙烯醇(PPG)和环氧乙烷(EO)-环氧丙烷(PO)嵌段共聚物Pluronic-L64的等温线。结果表明,在各活性炭样品上的等温线均为Langmuir型的;同一炭样对不同PEG的极限吸附量(g·g⁻¹)与分子量无关;极限吸附时每个PEG分子所占面积(A)与分子中所含EO数(nEO)间有直线关系,直线的斜率与硅烷化时间有关,

这一结果可用硅烷化时间延长时吸附分子的EO基可能以其氧原子向水,

碳氢链节靠近固体表面取向的模型解释。根据PPG的极限吸附量与分子量有关和极限吸附时的分子面积推断PPG分子不是以平躺方式吸附。甲基化硅胶对PEG的吸附量极小,对PPG的吸附量随分子量减小急剧降低,而对L64的吸附量明显大于在亲水硅胶上的。文中对所得结果给出了初步的解释。

关键词 [水](#) [嵌段共聚物](#) [聚氧化乙烯](#) [丙二醇](#) [P](#) [甲基化](#) [硅胶](#) [环氧乙烷](#) [硅烷基化](#) [环氧丙烷](#) [表面吸附](#) [界面化学](#) [固体-液体界面](#) [活性炭](#)

分类号 [0647](#)

Adsorption of polyethylene glycols, polypropylene glycols and polyoxyethylene-polyoxypropylene block co-polymer on solid/liquid interfaces III: Silanized active carbon/water and methylated silica gel/water interfaces

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Abstract The adsorption isotherms of polyethylene glycol (I), polypropylene glycol (II), and ethylene oxide-propylene oxide block copolymer Pluronic L64 (III) on various active C with different degree of silanization were Langmuir-type. The limiting adsorption of I with different mol. wt. onto the same C was constant; the mol. areas at limiting adsorption decreased linearly with increasing no. of ethylene oxide units, showing a slope which decreased sharply with increasing silanization time. The results were explained by the orientation of CH₂CH₂ groups of I at the solid surface. The limiting adsorption, the mol. area at limiting adsorption, and the adsorbed layer thickness indicated that II did not lie flat on the active C surface. The adsorption of I onto methylated silica gel was low and that of II on to methylated silica gel decreased with increasing mol. wt. The adsorption of III onto methylated silica gel was higher than that onto hydrophilic silica gel.

Key words [WATER](#) [BLOCK COPOLYMER](#) [POLYETHYLENE OXIDE](#) [PROPANEDIOL P](#) [METHYLATION](#) [SILICA GEL](#) [ETHYLENE OXIDE](#) [SILYLATION](#) [EPOXYPROPANE](#) [SURFACES ADSORPTION](#) [INTERFACE CHEMISTRY](#) [SOLID-LIQUID INTERFACES](#) [ACTIVE CARBON](#)

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