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隔膜电解法处理草浆黑液

盛利元[1], 侯曼玲[2], 许秀兰[2], 宋 鸽[2]

(1·中南大学应用物理与热能工程系,湖南长沙 410083;
2·中南大学化学化工学院,湖南长沙 410083)

摘 要：进行了隔膜电解法处理草浆黑液的可行性实验研究.隔膜电解法实验采用铸铁作牺牲阳极,石墨作阴极,多孔性的滤过式隔膜将阳极区与阴极区分开;阳极及其附近有铁的氧化与水解反应,碱木素的取代反应;阴极有析氢反应;水分子和钠离子在势场力作用下透过隔膜从阳极区进入阴极区,碱木素分子被隔离在阳极区;阳极区不断加入黑液,取走木素沉淀,阴极区不断取走回收碱液,从而实现碱液与木素的分离.在电流为1 A、电压为8 V及室温条件下电解12 h,阳极区黑液的色度、悬浮物及COD的去除率分别为66.4%,75.3%和94%,碱回收率达到94%以上.实验结果表明,作为一种处理黑液的碱回收技术,隔膜电解法处理草浆黑液比较容易直接嫁接到制浆工艺中,有可能成为解决草浆碱回收技术的新途径.

关键字：草浆黑液;电解法;碱回收

The treatment of black liquor from straw pulp by electrolytic process

SHENG Li-yuan[1],HOUMan-ling[2],XUXiu-lan[2],SONG Ge[2]

(1·Department of Applied Physics and Heat Engineering, Central South University, Changsha 410083, China;
2·College of Chemistry and Chemical Engineering, Central South University, Changsha 410083, China)

Abstract: Experimental study of feasibility on black liquor from straw pulp by electrolytic process has been carried out.The cast iron is used as anode and graphite electrode as cathode in the experiments. Electrolytic vessel is separated into both cells of anode and cathode with porous filtration membrane. There are reactions of oxidation and hydrolysis of Fe and substitution of alkaline lignin in the anode, and there is hydrogen evolution reaction on the cathode. H_2O and Na^+ move from the anode into the cathode through the membrane with the action of potential energy, and only lignin is left over in the anode. The process can make lignin separated from alkaline solution when black liquor is poured into the anode and alkaline solution is taken outfromthe cathode continually. The removal rate of colourity, SS and COD of black liquor can reach 66.4%, 75.3% and 94% respectively, and alkali recovery can be up to 94% at normal temperature and in treatment conditions (I=1 A,V=8 V,t=12 h). The experiments show that electrolytic process can be replanted onto pulping processes easily as a practical technique of alkali recovery and maybe is a new way of treating black liquor from straw pulp.

Key words:black liquor from straw pulp; electrolytic process; alkali recovery

地 址：湖南省长沙市中南大学 邮编： 410083
电 话： 0731-88879765 传真： 0731-88877727
电子邮箱： zngdxb@mail.csu.edu.cn 湘ICP备09001153号