

Treatment of Accelerator Diphenylthiourea Wastewater by Complexing Extraction Process

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Abstract: Complexing extraction process was used to treat the wastewater from the production of diphenylthiourea, an accelerator. The results showed that aniline in the wastewater was extracted with kerosene/di(2-ethylhexyl) phosphoric acid (P_2O_4) as complexing agent, and then the mass concentration of aniline and chemical oxygen demand (COD) of the wastewater was greatly reduced. When the flow rate ratio of complexing agent to wastewater was 1 : 1.5 and the mass concentration of P_2O_4 in the complexing agent solution was $21.3 \text{ g} \cdot \text{L}^{-1}$, the removal rate of COD and aniline in the wastewater was over 97% and 99.5% respectively, and the loss of complexing agent was low. The treated wastewater entered the water treatment system. The extracted aniline was treated by acid washing to produce aniline hydrochloride for the production of antioxidant RD. The complexing agent P_2O_4 could be reused in the wastewater treatment process. This method possessed good economic and social benefits. Complexation extraction method was an advanced treatment process for diphenylthiourea-containing wastewater.

Key words: accelerator; complexing agent; extraction; diphenylthiourea; wastewater treatment process; chemical oxygen demand; aniline

住友橡胶开发轮胎内静电发电新技术

据邓禄普轮胎网站 (www.dunlop.com.cn)

2019年7月30日报道,住友橡胶工业株式会社(以下简称住友橡胶)宣布与关西大学联合研究开发出一种通过轮胎转动产生电力的新技术。该技术可提供各种汽车数字器件的动力源,在实际应用中具有巨大潜力。

汽车特别是电子/电器设备专用车运行中,其电子/电器设备长时间运行感应电荷集聚,其电位可高达几千乃至几十万伏,从而干扰车内电子设备正常运行,甚至会导致车辆自燃等危害。利用好车辆中的静电成为需要攻克的课题。

住友橡胶联合关西大学开发的新技术是通过在轮胎内部安装发电(能量收集)装置,将轮胎内产生的静电转换成清洁能源。该发电装置利用轮胎转动时接地面积的形状变化而产生高效电能。最新研究结果将推进该项新技术作为轮胎压力监测系统(TPMS)和其他汽车设备中传感器的动力

源而得到实际应用,进而有助于研究并实现无需电池就可以使用各种数字器件的技术。

2018年10月,该研究主题被日本科学技术厅选为A-STEP(目标驱动型研发成果的无缝转化计划)下FS*型种子项目。这类种子项目是根据学术研究成果与“种子”技术的关联性程度,由学术界和企业联合开展可行性和应用研究,以期实现技术从理论走向实际应用,从实验室走向量产,进而实现技术的有效利用并形成核心技术。

住友橡胶将智能轮胎概念作为新的轮胎技术开发理念,旨在通过实现更高的安全性能和更优的环保性能来应对汽车行业正在发生的巨大变化,并一直致力于利用各种数字器件得到的数据推出新的汽车服务解决方案。

未来,住友橡胶将继续努力推进该项技术研究,开发全新核心技术,引领轮胎行业的技术进步。

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