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资源与生态环境研究所



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郑诗礼, 研究员, 中国科学院赣江创新研究院博士生导师。1994年毕业于中南工业大学(现中南大学)冶金物理化学专业, 获学士学位, 1997年毕业于中南大学冶金物理化学专业, 获硕士学位, 2000年毕业于中国科学院过程工程研究所, 获工学博士学位。博士毕业后一直在中科院过程所工作, 期间于2007年在美国犹他大学冶金工程系留学进修一年。

研究方向:

- (1) 北方稀土资源有价组分综合利用: 重点开展白云鄂博稀选尾矿矿相重构与高效富集分离新方法研究, 为稀选尾矿中铈钪等高值组分高效综合利用提供理论依据;
- (2) 南方离子型稀土资源绿色开采: 重点开展南方离子型稀土矿中低浓度稀土浸出液超常富集、铝杂质高效脱除等新方法研究, 支撑南方离子型稀土矿山绿色开采;
- (3) 钒钛磁铁矿综合利用新工艺: 重点开展高钒高钛磁铁矿中钒钛协同提取与钒钛高纯材料制备新方法研究, 为我国辽西朝阳矿等特色钒钛磁铁矿利用提供解决方案;
- (4) 能源/冶炼固废资源化利用: 重点开展废旧磷酸铁锂正极粉锂铁磷有价组分高效分离与再利用新方法、废硫酸钙渣综合利用研究, 为能源/冶炼固废资源化利用提供技术支撑。

代表论著:

1) Graphite felt incorporated with MoS₂/rGO for electrochemical detoxification of high-arsenic fly ash. *Chemical Engineering Journal*, 2020, 382: 122763.

- 2) Desilication of concentrated alkali solution by novel desilication reagent calcium hydroferrocarbonate: Part II. Desilication reaction and kinetics. *Hydrometallurgy*, 2019, 184:123-131.
- 3) Desilication of concentrated alkali solution by novel desilication reagent calcium hydroferrocarbonate: Part III. Standard thermodynamics investigation of desilication reaction using hydroferrite desilication reagents. *Hydrometallurgy*, 2019, 187:212-220.
- 4) An eco-friendly and cleaner process for preparing architectural ceramics from coal fly ash: Pre-activation of coal fly ash by a mechanochemical method. *Journal of cleaner production*, 2019, 214: 419-428.
- 5) High adsorption performance of the Mo-doped titanium oxide sieve for lithium ions. *Hydrometallurgy*, 2019, 187:30-37.
- 6) Efficient recovery of scrapped V₂O₅-WO₃/TiO₂ SCR catalyst by cleaner hydrometallurgical process. *Hydrometallurgy*, 2019, 187:45-53.
- 7) An investigation of the reduction of TiO₂ by Mg in H₂ atmosphere. *Chemical Engineering Science*, 2019, 195: 484-493.
- 8) Application of citric acid as eluting medium for titanium type lithium ion sieve. *Hydrometallurgy*, 2019, 183:166-174.
- 9) Potentially more ecofriendly chemical pathway for production of high-purity TiO₂ from titanium slag. *ACS Sustainable Chemistry & Engineering*, 2019, 7:4821-4830.
- 10) Complexation separation for vanadium and chromium by dithiocarbamate and its application in the treatment of chromium-vanadium-bearing slag. *Transactions of Nonferrous Metals Society of China*, 2019, 29:2400-2410.
- 11) Crystallization kinetics of ammonium polyvanadate. *Journal of Crystal Growth*, 2019, 526:125218.
- 12) Kinetics of decomposition of mullite and corundum in coal fly ash under highly alkaline condition. *Transactions of Nonferrous Metals Society of China*, 2019, 29:868-875.
- 13) Recovery of sodium from alumina-extracted fly ash using concentrated sodium carbonate solution. *Journal of Mining and Metallurgy, Section B: Metallurgy*, 2018, 54(2): 225-232.
- 14) Simultaneous extraction of vanadium and chromium from vanadium slag using low-pressure liquid phase oxidation method. *Physicochemical Problems of Mineral Processing*, 2018, 54(2):609-619.
- 15) Adsorption mechanism of Cr(III) on boehmite nanoparticles and the effect of Cr(III) on the dissolution of boehmite in caustic solution. *Abstracts of Papers of the American Chemical Society*, 2018, 256.
- 16) Mullite-bonded SiC-whisker-reinforced SiC matrix composites: Preparation, characterization, and toughening mechanisms. *Journal of the European Ceramic Society*, 2018, 38(16):5282-5293.

- 17) A novel method to extract vanadium from high-grade vanadium slag: non-salt roasting and alkaline leaching. *Physicochemical Problems of Mineral Processing*, 2018, 54(3):657-667.
- 18) High-rate performance and ultralong cycle life enabled by hybrid organic-Inorganic vanadyl ethylene glycolate for lithium-ion batteries. *Advanced Energy Materials*, 2018, 10(19): 16552-16560.
- 19) Tunable nano-interfaces between MnO_x and layered double hydroxides boost oxygen evolving electrocatalysis. *Journal Of Materials Chemistry A*, 2018, 6 (44): 21918-21926.
- 20) Sustainable Disposal of Cr(VI): Adsorption? Reduction Strategy for Treating Textile Wastewaters with Amino-Functionalized Boehmite Hazardous Solid Wastes. *ACS Sustainable Chemistry & Engineering*, 2018, 6(5):6811-6819.
- 21) Desilication of concentrated alkali solution by novel desilication reagent calcium hydroferrocarbonate: Part I. Synthesis of desilication reagent. *Hydrometallurgy*, 2018, 182:21-26.
- 22) Lithium adsorption from brine by iron-doped titanium lithium ion sieves. *Particuology*, 2018, 41:40-47.
- 23) Effect of mechanical activation on the leaching kinetics of niobium-bearing mineralisation in KOH hydrothermal system. *Hydrometallurgy*, 2018, 181:123-129.
- 24) Novel two-step process for synthesising β -SiC whiskers from coal fly ash and water glass. *Ceramics International*, 2018, 9 (44):10585-10595.
- 25) Efficient electrochemical recovery of dilute selenium by cyclone electrowinning. *Hydrometallurgy*, 2018, 179:232-237.
- 26) Mitigation of the surface oxidation of titanium by hydrogen. *The Journal of Physical Chemistry C*, 2018, 122:20691-20700.
- 27) A promising approach to recover a spent SCR catalyst: Deactivation by arsenic and alkaline metals and catalyst regeneration. *Chemical Engineering Journal*, 2018, 342:1-8.
- 28) Ramie biomass derived nitrogen-doped activated carbon for efficient electrocatalytic production of hydrogen peroxide. *Journal of The Electrochemical Society*, 2018, 5 (165):E171-E176.
- 29) Adsorption study of selenium ions from aqueous solutions using MgO nanosheets synthesized by ultrasonic method. *Journal of Hazardous Materials*, 2018, 341: 268-276.
- 30) Additives-assisted electrodeposition of fine spherical copper powder from sulfuric acid solution. *Powder Technology*, 2018, 326:84-88.
- 31) Hierarchical oxygen-implanted MoS₂ nanoparticle decorated graphene for the non-enzymatic electrochemical sensing of hydrogen peroxide in alkaline media. *Talanta*, 2018, 176: 397-405.
- 32) Superior lithium adsorption and required magnetic separation behavior of iron-doped lithium ion-sieves. *Chemical Engineering Journal*, 2018, 332: 160-168.

- 33) Mullite-based ceramic tiles produced solely from high-alumina fly ash: Preparation and sintering mechanism. *Journal of Alloys and Compounds*, 2018, 732: 828-837.
- 34) Preparation of sintered foamed ceramics derived entirely from coal fly ash. *Construction and Building Materials*, 2018, 163:529-538.
- 35) A novel process to enrich alumina and prepare silica nanoparticles from high-alumina fly ash. *Fuel Processing Technology*. 2018, 173:40-47.
- 36) Combined treatment of red mud and coal fly ash by a hydro-chemical process, *Hydrometallurgy*, 2018, 175:224-231.

获奖及荣誉:

现任湿法冶金清洁生产技术国家工程实验室副主任, 国际期刊*Hydrometallurgy*编委, 钒钛资源综合利用产业技术创新战略联盟副秘书长, 中国有色金属学会稀有金属冶金学术委员会委员、冶金反应工程专业委员会委员, 中国金属学会冶金过程物理化学分会委员会委员、冶金固废资源利用分会委员会委员, 无机盐工业协会铬盐专家委员会委员等。

获国家技术发明二等奖1项, 中国有色金属工业科技进步一等奖1项, 河北省科技进步一等奖1项, 省部级二等奖2项。发表学术论文200余篇, 其中SCI 收录论文100余篇; 申请发明专利100余项, 授权60余项 (其中授权国际专利1项); 合作撰写专著4部 (章节)。主持和承担国家重点研发计划、国家863计划、国家科技支撑、国家973计划、国家自然科学基金项目、中科院知识创新工程、企业委托等项目 (课题) 20余项, 并与企业共建有联合实验室。



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