Electronic Supplementary Material (ESI) for Environmental Science: Water Research & Technology. This journal is © The Royal Society of Chemistry 2021

Supplementary Material

1. Aliquat 336 (Quaternary ammonium ionic liquid)



Fig. S1 Structure of QAIL, aliquat 336 (methyltrioctylammonium chloride).

2. UV-Vis DRS Conditions/parameters

Instrument- Cary 5000- 1.12, Scan Software Version: 4.20 (468), X Mode- Nanometers, Y Mode- F(R), Beam Mode- Double

$$(\alpha h\nu)^{1/n} = A(h\nu - E_g) \tag{1}$$

Eq. 1 can be rewritten as for the diffused reflectance calculations:

$$(h\nu F(R))^{1/n} = A(h\nu - E_g)$$
⁽²⁾

where, A is an energy-independent constant, n is 1/2 for direct semiconductors; h^{ν} is the incident photon energy, E_g is the optical band gap and h is a Planks constant in eV.

3. GC-MS parameters/conditions:

Samples aliquots were extracted in ethyl acetate and injected in gas chromatograph 7890B coupled with mass MSD 5977B. 1 micro litre sample injected in split less mode by auto liquid sampling technique. GC having column HP-5 (30 m x 0.25 mm) and carrier gas was He with flow of 1 ml/min. Inlet and transfer line temperature was 250 °C. GC oven programme was started at 60 °C for 1 min, raised to 90 °C at rate of 20 °C/min again raised to 250 °C at 20 °C/min for hold time 5 min. Single quadruple- MSD was tuned with EI mode and its voltage was 992 V. Temperatures of MS source and MS quad were 250 and 200 °C respectively. Solvent delay was set to 4 min. Mass range was selected between 30 to 600 m/z.



4. Effect of pH of wastewater on photodegradation of QAIL

Fig. S2 Effect of pH of wastewater on photodegradation of QAIL.

5. Recycling of the catalyst



Fig. S3 Recycling of the catalyst 5% Ag-SnO₂ (0.6 g.L⁻¹) for the successive degradation of QAIL (100 mg.L⁻¹).

6. Mass spectra of the QAIL degradation



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Fig. S4 Mass spectra of the QAIL degradation (a & b: Parent ions at reaction time 0 h; c, d &e: at reaction time 1 & 2 h; f & g: at reaction time 3 h).