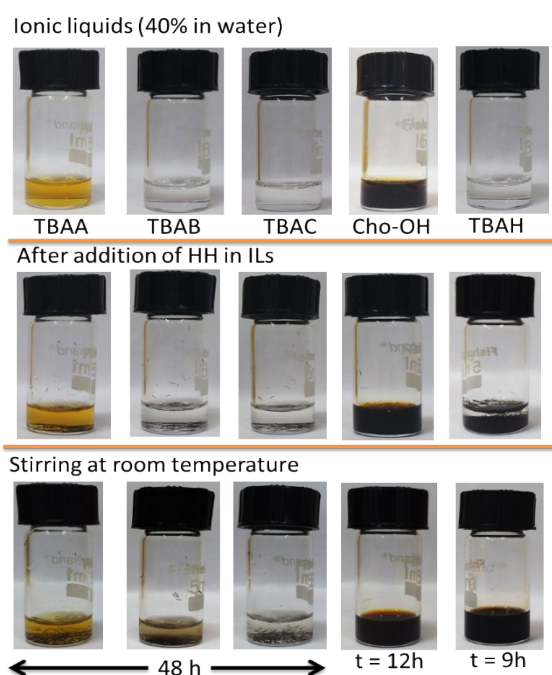


## Multi tasking hydrated ionic liquid as a sustainable media for the processing of waste human hair: A biorefinery approach

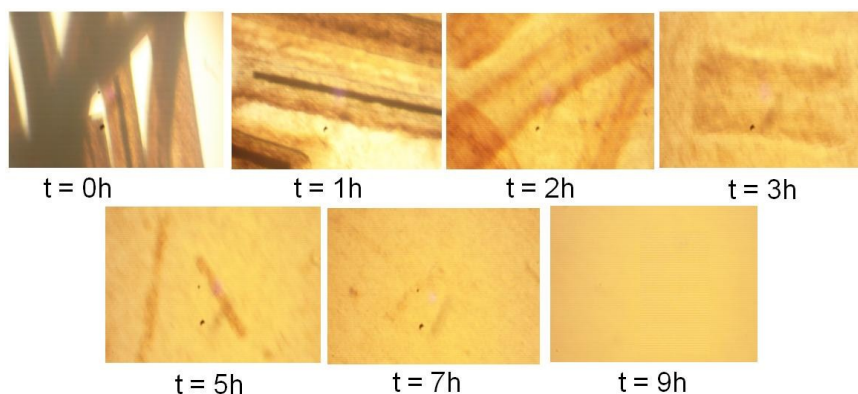
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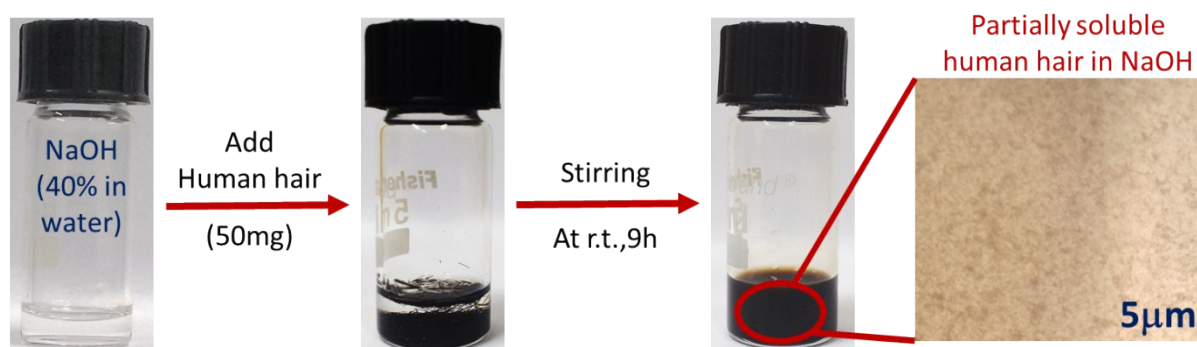
<sup>b</sup> AcSIR- Central Salt & Marine Chemicals Research Institute, G. B Marg, Bhavnagar-364002 (Gujarat), India.



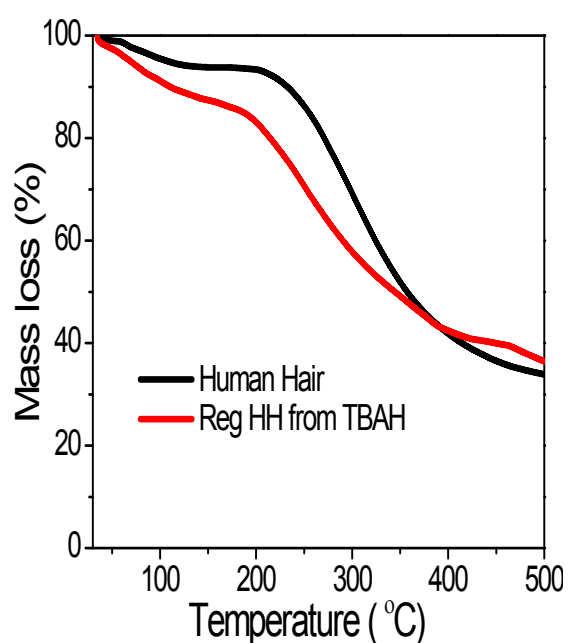
**Figure S1:** Optical images of dissolution of Human hair in ILs



**Figure S2:** Microscopic images of HH (25 wt%) in TBAH IL taking at the time of dissolution process with different time interval



**Figure S3** : Dissolution of waste human hair in NaOH (40% Water) at 5% w/w at room temperature.

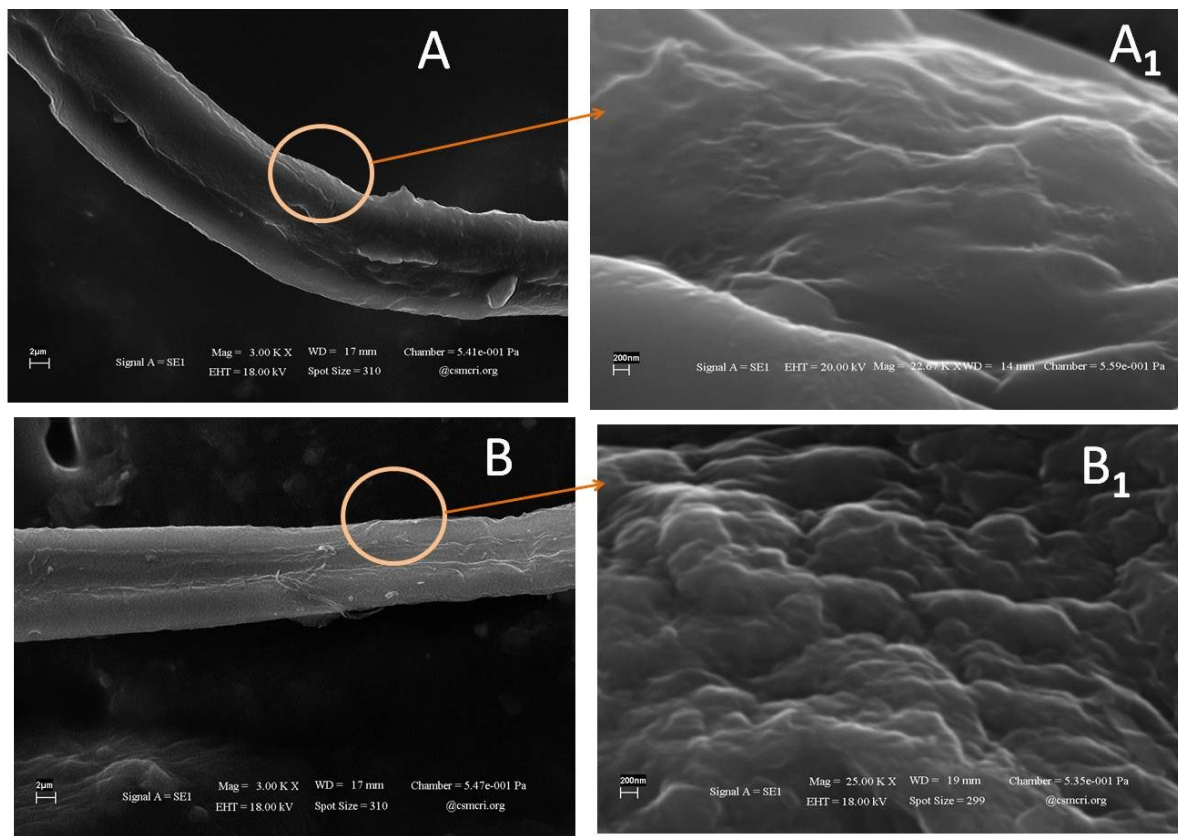


**Figure S4:** Thermo gravimetric analysis of Human hair and regenerated Human hair from TBAH

**Table S1:** Elemental analyses of human hair, extracted keratin and melanin and comparison with standards

Entry	Sample	%C	%H	%N	%S
1.	Human Hair	43.56	6.39	14.42	4.14
2.	Extracted Keratin from Human Hair	44.12	6.49	13.10	2.18
3.	Std Wool keratin	41.90	6.80	12.93	2.05

4.	Extracted crude melanin from Human hair	45.28	6.03	12.90	3.13
5.	Std Melanin	47.64	4.044	5.56	3.45



**Figure S5 :** SEM images of human hair before treatment (A) at lower magnification and (A<sub>1</sub>) at higher magnification and regenerated human hair from TBAH (B) at lower magnification and (B<sub>1</sub>) at higher magnification