Pollutants degradation is always faster in the presence of DOM than in purified water. The enhancement effect strongly depends on the nature of DOM extracts. Photodegradation of aquatic micropollutants can be enhanced through DOM sensitization pathway involving the formation of reactive species.

**A – Photodegradation in the presence of DOM**

- Pollutants degradation is always faster in the presence of DOM than in purified water.
- Enhancement effect strongly depends on the nature of DOM extracts.
- An order of DOM efficiency is observed:
  - South Platte (69%, E2; 72%, IPU) >> Pinail (41%, E2) > Suwannee (39%, E2; 37%, IPU)

**B – DOM production of reactive species**

- Photodegradation only weakly decreases with the addition of inhibitors (azide → $\cdot O_2$; 2-propanol → OH$^-$).
  - For E2:
    - Without inhibitor > with NaN$_3$ > with 2-propanol
  - For IPU:
    - Without inhibitor ≥ with 2-propanol > with NaN$_3$
- Reactive species involved:
  - $\cdot O_2^-$: participation in the photodegradation about 4 – 17%
  - OH$^-$: participation in the photodegradation about 0 – 17%

**C – Pathways and photoproducts**

- 8 and 5 photoproducts have been identified during the degradation of E2 and IPU respectively.
  - Pathway of E2:
    1: hydroxylation of aromatic cycle or cycle closed to aromatic one (E21-E24)
    2: E2 quinone methide derivative (E27)
    3: hydroxylation of aromatic cycle and oxidation of phenolic groups (E25 and E26)
  - Pathway of IPU:
    1: demethylation of dimetylurea group (I5)
    2: hydroxylation of aromatic cycle (I1 and I4)
    3: simultaneous demethylation and hydroxylation of isopropyl group (I2 and I3)

**Conclusions**

- DOM presents an ability to photoinduce the degradation of micropollutants; its efficiency depending on the micropollutant and on its own properties (nature of the extract).
- During photoinductive degradation, reactive species such as singlet oxygen and hydroxyl radicals are produced by DOM and react with the pollutants. However, the participation of these 2 molecules has only been observed. Excited triplet states may contribute to a large extent in the reaction.
- Photoproduts have been observed. They come from hydroxylation, oxidation and demethylation/dealkylation mechanisms of the parent compound.