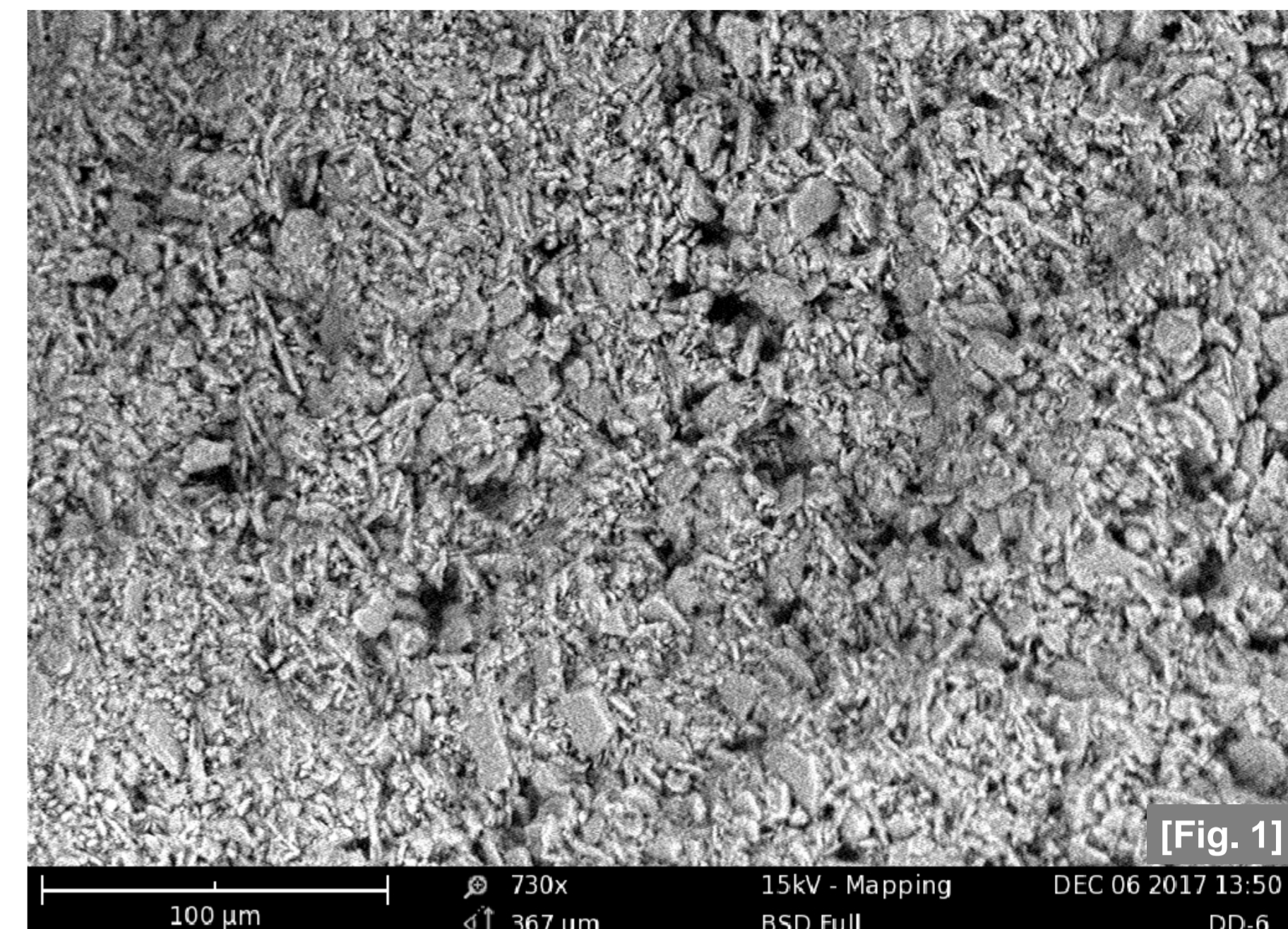


DD6 Adsorber

Se^{IV&VI}, As^{III&V}, P^V in waste water

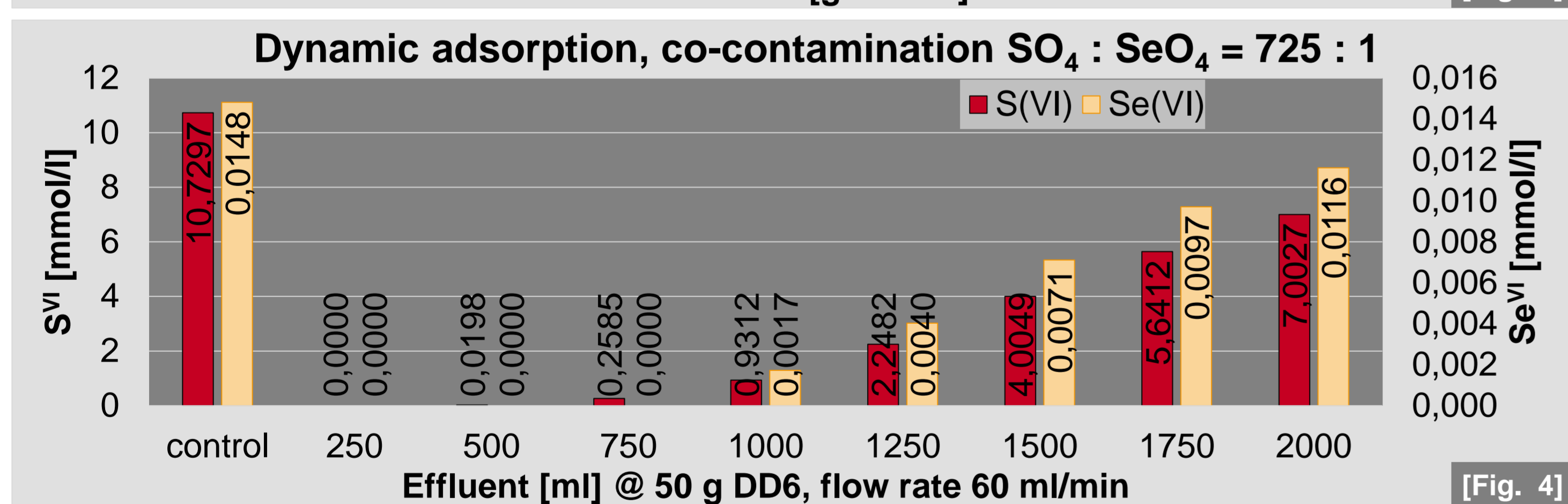
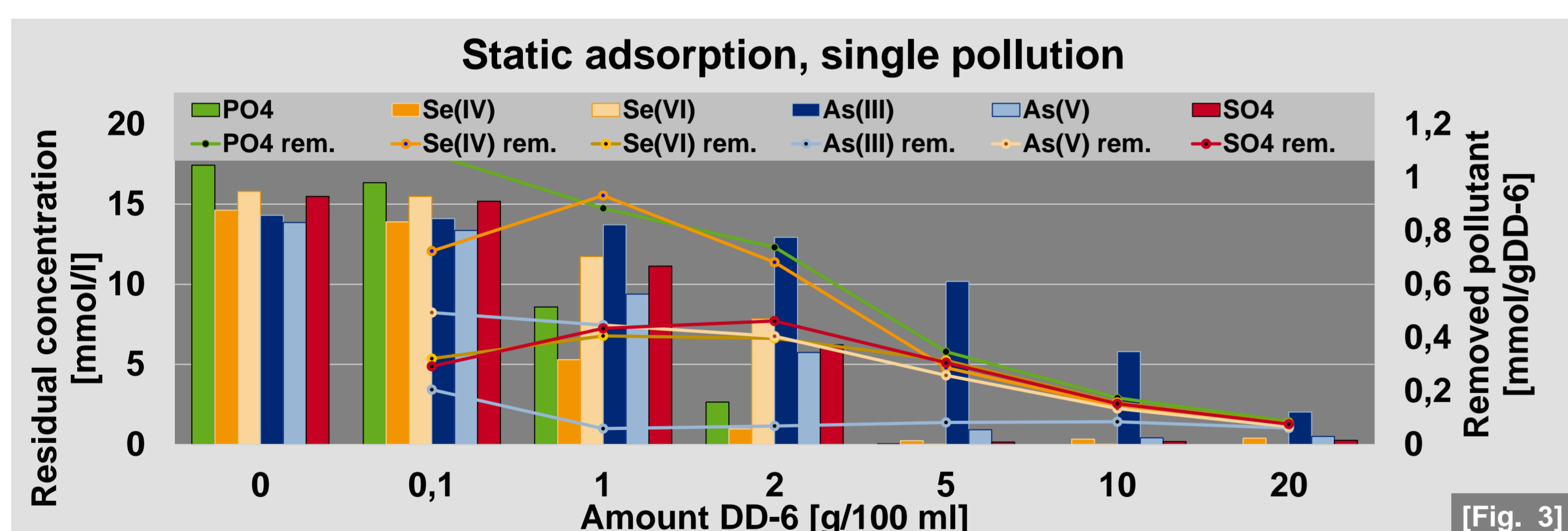
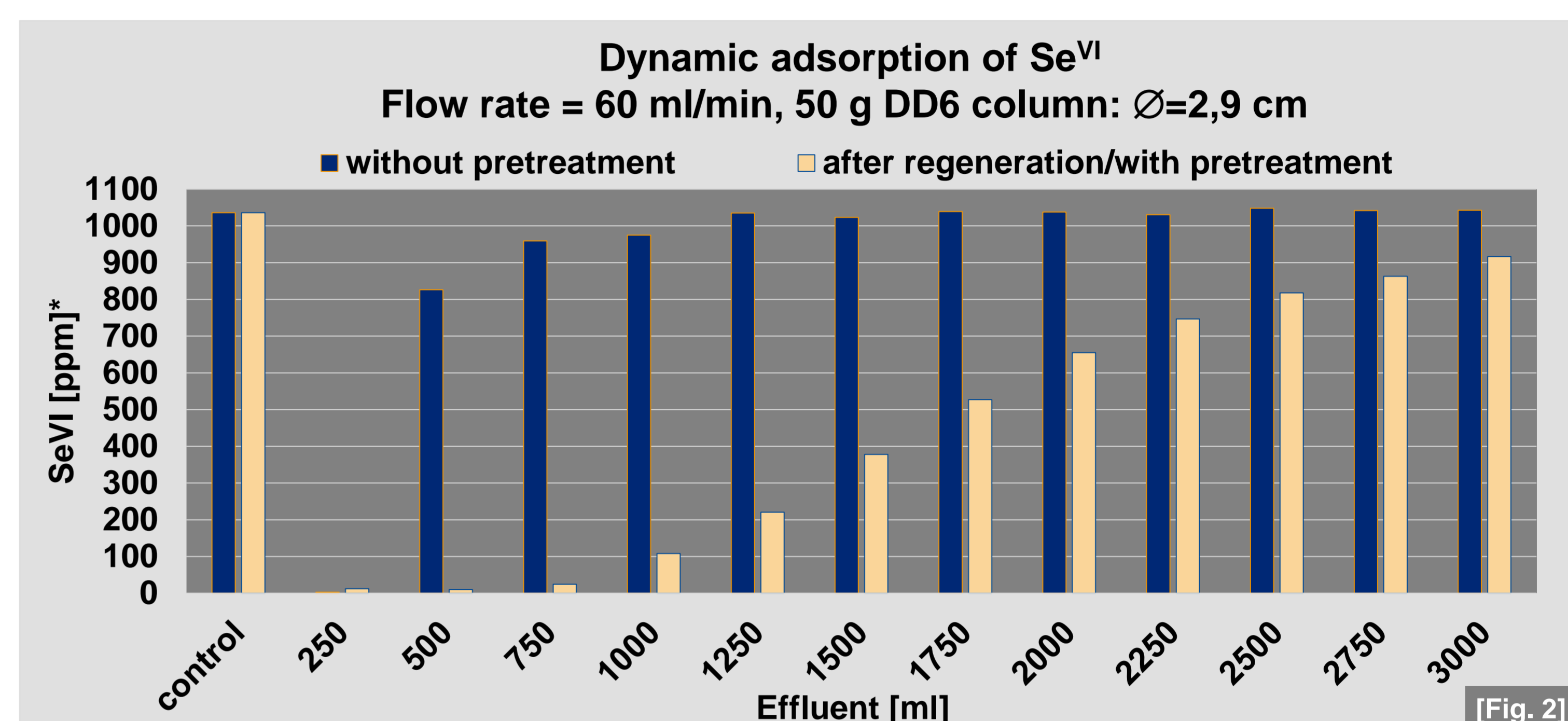
Dr. Markus Maier¹, Karine Odiot², Dr. Wolfgang Denuell²

¹BASF Construction Solutions GmbH, ²BASF SE



Pretreatment

REM-picture [1] shows DD6 as compressed small plates and cuboids of $\gamma\text{-Al}_2\text{O}_3$ in porous structure with surface area of 380 m²/g. In pH-titration experiment a buffer area at pH=4 and an equivalent point at pH=2 was found. For optimized anion removal a pretreatment of DD6 at pH<2 is recommended. For example Selenate (Se^{VI}) can only be removed after acidification of DD6 [2].



Adsorption

Static adsorption experiments (0,1-20 g DD6 in 100 ml single polluted aqueous solution) with equimolar contamination levels show different affinity of contaminant to the acidified surface [3].

Removal: P^V ≈ Se^{IV} > Se^{VI} ≈ S^{VI} ≈ As^V > As^{III}

Multiple contamination causes competitive adsorption with higher amount of DD6 required due to sum of contaminants adsorbed and limited reactive centers of the $\gamma\text{-Al}_2\text{O}_3$ surface [4].

Regeneration

Regeneration procedure:

- 1.) NaOH 1n, 1000 ml (45 ml/min)
- 2.) H₂O, 500 ml (45 ml/min)
- 3.) HCl 1n, 1000 ml (30 ml/min)
- 4.) H₂O, 500 ml (45 ml/min)

Multiple use of DD6 is possible by using above mentioned regeneration process.

