



BELBaR

BELBaR Project

Start-up Meeting

Introduction to WP4

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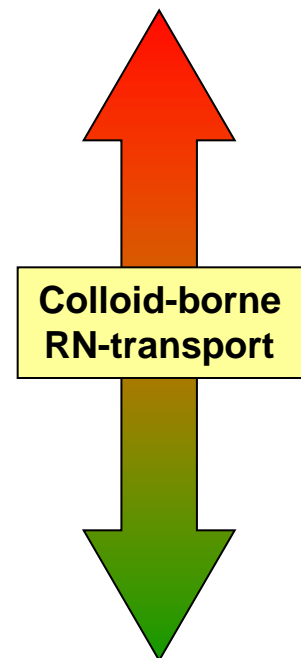
□ Relevance of colloids for RN transport

- advective groundwater transport
- high pH, low salinity
- large geochemical gradients
- organics (Humic-/Fulvic acids)
- strongly sorbing RNs



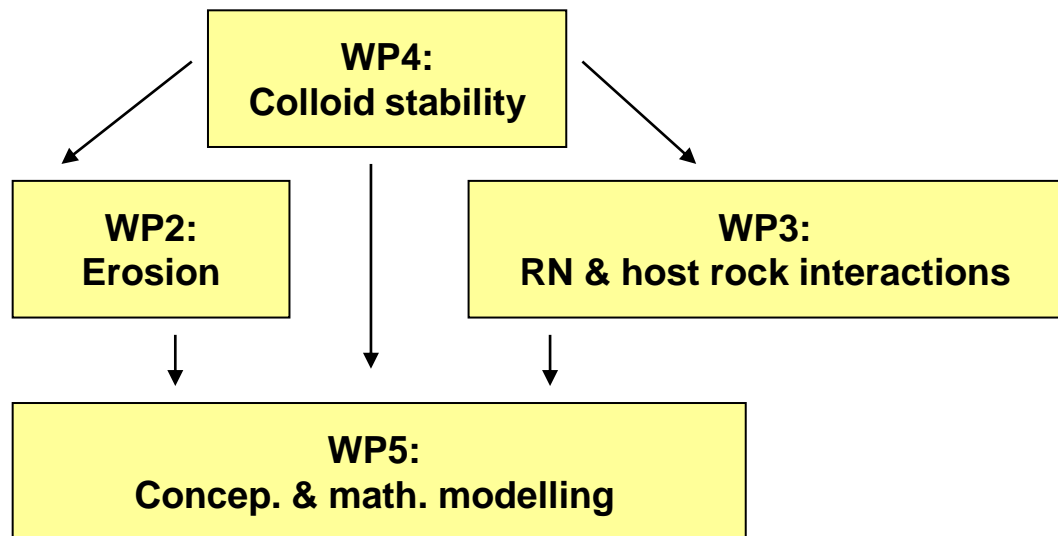
- diffusive groundwater transport
- high salinity
- small geochemical gradients
- no organics
- weakly sorbing RN

More relevant



Less relevant

WP 4 - Clay colloid stability



□ Main objectives:

- clay colloid stability as an input for WP2, WP3 and WP5
- clay colloid stability studies under different geochemical conditions with respect to ionic strength and pH
- critical coagulation concentration, the effect of surfactants, coagulation
- role of complexing agents (organic / humic substances) on clay colloid stability



WP 4 - Colloid stability

Work package number	4	Start date or starting event:					Project Month 1
Colloid stability							
Activity Type	RTD						
Participant	CIEMAT	KIT-INE	NRI-REZ	SKB	ClayTech	KTH	B-Tech
Person-months for the participant	6	7	7	1	9	28	1

□ Participation in WP 4:

- **7 partners total**
- **5 partners with research program, 2 partners as „observers“**
- **SKB:** cooperate with or support KTH and Clay Technology
- **B-Tech:** following the work and contribute relevant observations from their experimental work in WP2

□ Clay colloid stability investigations under different geochemical conditions:

- pH, ionic strength, inorganic cations - CIEMAT, KIT-INE, NRI-Rez
- presence of organic matter - KIT-INE, NRI-Rez

Partner:	Bentonite type:	pH	Ionic strength	Inorganic cations (coagulation, CCC)	Organic matter (fulvic acids)	Methods
NRI-REZ	Rokle, MX-80	Yes	Yes	Yes	Yes	DLS, visual methods
KIT-INE	FEBEX, MX-80	Yes	Yes	?	Yes	AsFIFFF/ICP-MS, LIBD, DLS
CIEMAT	FEBEX, Milos, MX-80	Yes	Yes	Yes	-	SPS

WP 4 - Colloid stability

- **Clay colloid stability studies from physico-mechanical point of view**
 - **rheology and turbidity experiments, transition between sol-gel, diagrams - ClayTech**
 - **investigating the ionic structures of the diffuse double layer and the swelling pressure between the clay particles under different conditions, use of weighted correlation approach - KTH**

Partner:	Bentonite type:	Rheology	Turbidity	Temperature
ClayTech	Deponit Ca-N, Asha, MX-80	Yes	Yes	Yes
KTH	Ca dominated bentonite ?	?	?	?

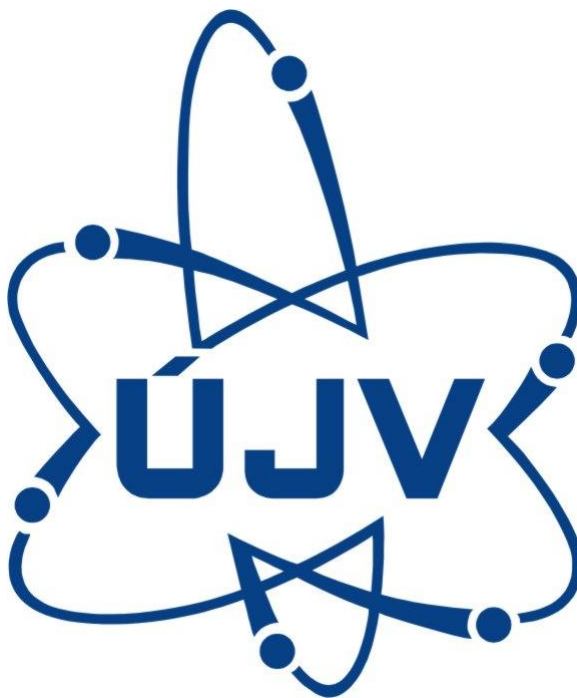


WP 4 - Colloid stability

Deliverable Number	Deliverable Title	Lead participant	Nature	Dissemination level	Delivery date
D4.4	State of the art report on experimental techniques used for investigations of clay colloid stability, including an establishment of protocol for rheology and turbidity experiments	ClayTech, CIEMAT, KIT-INE, NRI-Rez	R	RE	6
D4.14	Progress report on the effect of pH on clay colloid stability	CIEMAT, KIT-INE, NRI-Rez, ClayTech	R	PU	15
D4.15	Status report on the theoretical understanding of the effect of Ca on clay gel stability	KTH	R	RE	15
D4.26	Status report on the reversibility of the coagulation process	CIEMAT	R	PU	27
D4.27	KIT-INE Progress report on colloid stability and DOC effect	KIT-INE	R	PU	27
D4.28	Status report on influence of complexing agents on clay colloid stability	KIT-INE, NRI-Rez	R	PU	27
D4.29	Status report on the effects of various anions	ClayTech, CIEMAT, KIT-INE, NRI-Rez	R	PU	27
D4.38	Status report on the effect of different bentonite types (Rokle, Mx-80, Febex, etc) on clay colloid stability	CIEMAT, KIT-INE, NRI-Rez, ClayTech	R	PU	39
D4.39	Rheology of attractive and repulsive montmorillonite/bentonite gels: Rheology of attractive and repulsive montmorillonite/bentonite gels	ClayTech	R	PU	39
D4.40	Effects on colloid stability: Effects of different mechanisms/factors on colloid stability of dispersions of calcium dominated bentonites in dilute solutions	KTH	R	PU	39
D4.45	WP4 partners final report on experimental results on clay colloid stability	NRI-Rez, All	R	PU	44



Thank you for your attention



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