

EWG-IE 2021 ONLINE WORKSHOPS

February 2nd 2021

Understanding suffusion consequences on the constitutive behavior of granular materials

Suffusion, what's up doc?

1. Context

In the last decade, suffusion, one of the four mechanisms of internal erosion, has attracted more and more attention. Material susceptibility to suffusion is linked to the notion of internal instability, i.e. the possibility for the finest particles to be transported in the pore space. Such process leads to microstructure changes, hence to different mechanical response of eroded soils. However, less attention has been paid so far to the effective consequences of suffusion on the mechanical resistance of soil and the development of instability mechanisms.

How does suffusion affect the constitutive behavior of soils and may (or not) generate mechanical instability?

Several research teams have developed experimental techniques and devices, namely suffusion permeaters, triaxial erodimeter, in order to investigate the suffusion process (initiation, development) and identify the main parameters (hydraulic, physical, structural, etc) that can influence the soil's behavior with respect to this phenomenon.

Based on the expertise gained on using different apparatus and slightly different experimental protocols, it is probably time to take some hindsight on the capabilities as well as on the limits of the experimental campaigns carried out so far.

To which extent, the experimental devices help characterizing material susceptibility to suffusion?

These are the two questions that will be addressed in the proposed webinar.

2. Workshop aims and scope

Under the hospices of the European Working Group on Internal Erosion, this online workshop proposes to benefit from the expertise of the different research groups (inside and outside of the EWGIE) working on suffusion. The purpose of this half-day workshop is:

- To highlight first the challenges posed today by the experimental approaches of suffusion and enhance the up to date solutions proposed to address these issues.
- To present then methods and results dealing with the consequences of suffusion on the constitutive behavior of soils both from experimental, analytical and numerical points of views.

The expected outcome of the workshop is the sharing of new perspectives on:

- Experimental testing procedures and subsequent analyzes to improve our understanding of how suffusion develops and affect soils properties.
- How to account for suffusion in constitutive modeling of soils. Progress on this topic is a key ingredient in assessing the effective consequences of suffusion on hydraulic structures.

3. Practical information

The workshop will be organized by the research unit RECOVER, from the French research institute INRAE (formerly IRSTEA). The local organizing committee is composed of Nadia Benahmed and Antoine Wautier.

The workshop will be held online on **Tuesday February 2nd 2021 from 9h00 to 12h30 (Central European Time)**. Timeslots of 15 min (including questions) will be given for each presentation. Additional time slots for general discussions will be schedule.

The final program will be announced soon!