

# Partial Differential Equations and Applied Mathematics Seminar

## Title

Sinks and Sources in chemotactic aggregation

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**Date** Feb. 9th, Fri, 5:00~ 6:00 Pm

**Location** Science Building #225 Yonsei University

## Abstract

There are many instances in nature where chemotaxis happens surrounded by a fluid. Several approaches considering this possibility have recently given rise to a significant number of mathematical models, coupling Keller-Segel type systems with Navier-Stokes equations. In an attempt to get some deeper insight into the role of current fluids during chemotactic aggregation, we approach the case when the fluid flow is a given sink or else a source. When having a sink and radial symmetry in the initial data, we find, after a previous deduction of a novel singular Moser-Trudinger type inequality, a new condition depending on the velocity of the fluid flow for having global existence.