```
# load required package
library(tidyverse)

# Path to get .csv filenames from
directory_path <- "D:/Bahareh/Microfluidic device-Circular microposts/voltage
effect/ANALYSIS"


#setting working directory to path
setwd(directory_path)
# list files from the directory and return file names that match the regular expression
for .csv
csv_files <- list.files(path = directory_path, pattern = "\\.csv$", full.names = FALSE)


# map read_csv over all the files and load them into a dataframe, appending a column for
filename
combined_df <- map_dfr(csv_files, ~ read_csv(.x, locale=locale(encoding="latin1")) %>%
mutate(filename = tools::file_path_sans_ext(basename(.x))))

# calculate the standard deviation for the Gray_value, for each file
sd <- combined_df %>%
  group_by(filename) %>%
  summarise(sd_grey = sd(Gray_Value))
# new way
# split the filename by the "-" separator
dat <- sd %>%
  separate(filename,
           into = c("flowrate","voltage" , "location", "sample"),
           sep = "-") %>%
  mutate_if(is.character, str_trim)

# widen the dataframe on the location variable so we can divide outlet by inlet for the mp
calculation
dat2 <- dat %>%
  pivot_wider(names_from = location, values_from = sd_grey) %>%
  # drop_na() %>%
  mutate(mp = (1 - (outlet/inlet)) *100)

dir.create("./out")
name <- paste("./out/", basename(directory_path), ".csv", sep = "")
write_csv(dat2, name)

# dat2 %>%
#   separate(flow_ut, into = c("flowrate", "location")) %>%
#   ggplot(aes(flowrate, mp)) +
#   geom_point()
```