function datanum = dataprocess(Background\_RGB)

Background\_Gray=rgb2gray(Background\_RGB);% RGB to Gray

[W1,W2]=size(Background\_Gray); % read size of gray figure

Background\_BW=zeros(W1-10,W2); % delete the top edge of the gray figure

thresh=208; % set threshold for rgb to bw

for i=1:W1-10

 for j=1:W2

 if Background\_Gray(i+10,j)<thresh % transfer rgb to bw

 Background\_BW(i,j)=0;

 else

 Background\_BW(i,j)=255;

 end

 end

end

Background\_Skel=bwareaopen(~Background\_BW,500); % inverse the figure and delete noise parts

stat=regionprops(Background\_Skel,'all'); % read all the large white blocks

Background\_BW2=zeros(W1-20,W2); %set new matrix for figure

%PointNum=zeros(1,1); % statics array

factor=30; % adjust factors

%Channel 1

corn1=stat(1).Extrema; % read all the corner of the blocks

MinL=floor(min(corn1(:,1)))+5; %get the min point in column

MaxL=floor(max(corn1(:,1)))-5; %get the max point in column

MinC=floor(min(corn1(:,2)))+5; %get the min point in row

MaxC=floor(max(corn1(:,2)))-5; %get the max point in row

CenterL=floor((MinL+MaxL)/2); %get center of the block

CenterC=floor((MinC+MaxC)/2); %get center of the block

Avg1=mean(mean(Background\_Gray(CenterC:MaxC,MinL:CenterL))); % read mean of part one

thresh=Avg1-factor; % set threshold

for i=CenterC:MaxC

 for j=MinL:CenterL

 if Background\_Gray(i,j)<thresh % transfer rgb to bw

 Background\_BW2(i,j)=0;

 else

 Background\_BW2(i,j)=255;

 end

 end

end

Background\_BW2=bwareaopen(~Background\_BW2,40); % inverse the figure and delete small noise parts

Background\_BW2=~Background\_BW2; % inverse the figure back

Avg2=mean(mean(Background\_Gray(CenterC:MaxC,CenterL:MaxL))); % read mean of part two

thresh=Avg2-factor; % set threshold

for i=CenterC:MaxC

 for j=CenterL:MaxL

 if Background\_Gray(i,j)<thresh % transfer rgb to bw

 Background\_BW2(i,j)=0;

 else

 Background\_BW2(i,j)=255;

 end

 end

end

Background\_BW2=bwareaopen(~Background\_BW2,40); % inverse the figure and delete small noise parts

Background\_BW2=~Background\_BW2; % inverse the figure back

Avg3=mean(mean(Background\_Gray(MinC:CenterC,MinL:CenterL))); % read mean of part three

thresh=Avg3-factor-1; % set threshold

for i=MinC:CenterC

 for j=MinL:CenterL

 if Background\_Gray(i,j)<thresh % transfer rgb to bw

 Background\_BW2(i,j)=0;

 else

 Background\_BW2(i,j)=255;

 end

 end

end

Background\_BW2=bwareaopen(~Background\_BW2,40); % inverse the figure and delete small noise parts

Background\_BW2=~Background\_BW2; % inverse the figure back

Avg4=mean(mean(Background\_Gray(MinC:CenterC,CenterL:MaxL))); % read mean of part three

thresh=Avg4-factor-1-1; % set threshold

for i=MinC:CenterC

 for j=CenterL:MaxL

 if Background\_Gray(i,j)<thresh % inverse the figure and delete small noise parts

 Background\_BW2(i,j)=0;

 else

 Background\_BW2(i,j)=255;

 end

 end

end

Background\_BW2=bwareaopen(~Background\_BW2,40); % inverse the figure and delete small noise parts

Background\_BW2=~Background\_BW2; % inverse the figure back

mmm=1;

PointNum=zeros(mmm,1);

for i=MinC:MaxC

 for j=MinL:MaxL

 if Background\_BW2(i,j)==0

 PointNum(mmm,1)=PointNum(mmm,1)+1; % calculate black points in channel 1

 end

 end

end

datanum = PointNum;

clc;

clear all;

close all;

tic;

n=91; %total num of pics in one file

m=60; % total num of files

h = waitbar(0,'Please wait...');

for j = 1:m

 for i=1:n

 imageName=strcat('B:\experiment\spores experiment\12 29 2015\',num2str(162+j),'\',num2str(i),'.jpg');%num2str(start number-1+j)

 I = imread(imageName);

 datanum(i,j) = dataprocess(I); % calculate each pics data datanum

 waitbar(((j-1)\*i+i)/(m\*n),h);

 end

end

datanum;

xlswrite('B:\experiment\spores experiment\data 5 22 2015\9 19 2015 01.xlsx', datanum); %name of excel

t=toc;

disp('Total running time: ');t;