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C SUBROUTINE TO CALCULATE THE VALUES OF THE SLOPE , THE INTERCEPT ,
C AND THE CORRELATION COEFFICIENT VIA LINEAR REGRESSION
C
C THE DATA THAT MUST BE PROVIDED TO THE SUBROUTINE
C NUMBER OF POINTS , X DATA , Y DATA
C
C OUTPUTTED DATA IS
C SLOPE , INTERCEPT , CORR COEFF
C
C DIMENSION ARRAYS
      DIMENSION X(100),Y(100)
C DEFINE SUBROUTINE
      SUBROUTINE LINREG(PD,X,Y,SLO,P,CC)
C SET SUMS EQUAL TO ZERO
      SX=0
      SY=0
      SX2=0
      SXY=0
      SCT=0
      SCBX=0
      SCBY=0
C CALCULATE VALUES NEEDED TO CALCULATE SLOPE INTERCEPT
      DO 10 I=1,PD
        SX=SX+X(I)
        SY=SY+Y(I)
        X2=X(I)**2
        SX2=SX2+X2
        XY=X(I)*Y(I)
        SXY=SXY+XY
      10  CONTINUE
C CALCULATE THE SLOPE AND INTERCEPT
      SLO=(SXY-((SX*SY)/PD))/((SX2-((SX**2)/PD)))
      INT=(SY-(SLO*SX))/PD
      P=EXP(INT)
C CALCULATE VALUES FOR CALCULATION OF CORR COEFF
      XA=SX/PD
      YA=SY/PD
      DO 20 I=1,PD
        CT=(X(I)-XA)*(Y(I)-YA)
        SCT=SCT+CT
        CBX=((X(I)-XA)**2)
        CBY=((Y(I)-YA)**2)
        SCBX=SCBX+CBX
        SCBY=SCBY+CBY
      20  CONTINUE
C CALCULATE CORR COEFF
      CC=SCT/((SCBX**0.5)*(SCBY**0.5))
C END SUBROUTINE
      RETURN
      END

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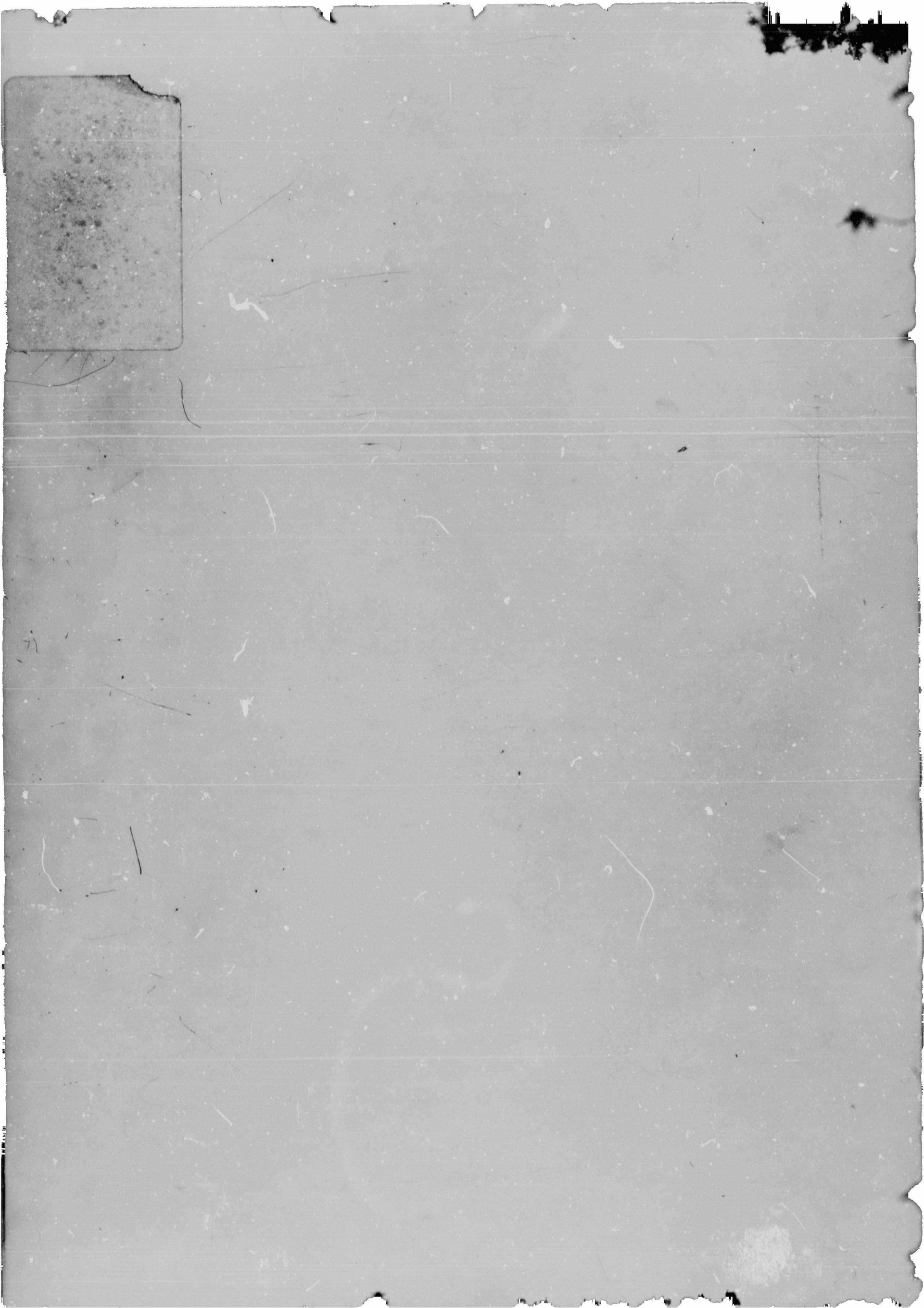
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Author Johns Mark William

Name of thesis The Simulation Of Gold Adsorption By Carbon Using A Film Diffusion Model. 1987

PUBLISHER:

University of the Witwatersrand, Johannesburg

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