In[9]:=
```
Manipulate[
Row[{Framed@Show[ImagePad[img1, {{0, 0}, {60, 60}}, Black], ImageSize -> 350],
   Framed@Show[ImagePad[img2, {{0, 0}, {60, 60}}, Black], ImageSize -> 350]},
  Spacer[20]],
Item[Row[{"", Button["第一张照片", img1 = ImageCrop[CurrentImage[], {320, 120}],
       ImageSize -> {100, 30}], Button["清空", img1 = img2 = Image@Table[0, {120}, {320}],
       ImageSize -> 100],
      Button["第二张照片", img2 = ImageCrop[CurrentImage[], {320, 120}],
       ImageSize -> {100, 30}]} Spacer[114]], ControlPlacement -> Top],
Item[Row[{"", Column[{Control[{{k, 30, "k"}}], Null, Control[{{i , 0, "I"}}], Null,
Control[{{θ1, 0, "θ1"}}], Null, Control[{{θ2, 0, "θ2"}}], Null, Control[{{h, 0, "H"}}]},
     Right], "", "", Column[{
Dynamic[Style[StringForm["\!\(\*SubscriptBox[\(B\), \(1\)]\)=`1` T",
          NumberForm[N[(μ0 n i R^2) / (R^2 + a^2)^(3 / 2)], {10, 9}]], {20, Blue}]], Null,
Button["检查CCD", CreateDialog[CurrentImage[]],
       ImageSize -> {180, 40}], Button["调整仪器",
CreateWindow[DialogNotebook[
(Manipulate[Framed[Dynamic@Show[ImagePad[imgt, {{0, 0}, {60, 60}}, Black],
               ImageSize -> 400]], Item[Style["仪器调整与k值的侧量", {17, Blue}],
             ControlPlacement -> Top],
Delimiter,
Item[Row[{"", Column[{Button[Style["拍摄"], imgt := ImageCrop[CurrentImage[],
                     {320, 120}], ImageSize -> {150, 25}], Button[Style["拍照"],
                   imgt = ImageCrop[CurrentImage[], {320, 120}],
                   ImageSize -> {150, 25}]}]},
              Spacer[30]], ControlPlacement -> Right],
Delimiter,
Item[Style["k值的测量\n", {15, Bold}], ControlPlacement -> Right],
Item[Column[{Control[{{p, {{0, 0}, {0, 0}}, "p"}}],
Control[{{l, 0, "l"}}]},
              Spacings -> 3, Frame -> All, FrameStyle -> GrayLevel[0.6]],
             ControlPlacement -> Right],
            Item[
Column[{Row[{"", Button[Style["计算", {Red, 15}], (If[l != 0, k = Norm[p[[1]] - p[[2]]] / l]
), ImageSize -> {150, 30}], ""}, Spacer[30]],
Row[{"", Dynamic[
                  Style[StringForm["k= `1`", NumberForm[k, {8, 4}]], {Red, 15}]], ""},
                Spacer[50]]
}, Spacings -> 2, Frame -> All,
              FrameStyle -> GrayLevel[0.6]], ControlPlacement -> Right],
Initialization :> (imgt := ImageCrop[CurrentImage[], {320, 120}])]],
         WindowTitle -> "仪器调整与k值的侧量", WindowSize -> All], ImageSize -> {180, 40}],
       Button[Style["计算", {Red, 15}], Module[{B1, p1, p2, l, α, Be},
p1 = graygetzuobiao1[img1, 120];
         p2 = graygetzuobiao1[img2, 120]; l = Norm[p1 - p2];
Quiet[α = 1 / 2 ArcTan[l / (k h)]]; B1 = (μ0 n i R^2) / (R^2 + a^2)^(3 / 2);
Quiet[Be = (B1 Sin[Abs[θ1/180 π - θ2/180 π] - α]) / Sin[α]];
CreateDialog[
          Style[StringForm["\n所测地磁场大小为： `1` T \n", NumberForm[Be, {10, 9}]],
           {Red, 30}]]], Method -> "Queued", ImageSize -> {180, 40}]}]}, Spacer[50]],
ControlPlacement -> Bottom],
```

```
Initialization :>
  (img1 = img2 = Image@Table[0, {120}, {320}]; μ0 = 4 π * 10^-7; n = 1500;
   R = 0.025; a = 0.04; graygetzuobiao1[img_, L_: 240, l_: 320] :=
Module[{data, max = 0, zuobiao, k},
     data = ImageData[ColorConvert[img, "Grayscale"]];
If[Length[data[[1, 1]]] == 0,
Do[k = data[[m, n]];
       If[k > max, max = k; zuobiao = {n - 1, L - m}], {m, 1, L}, {n, 1, l}],
Do[k = data[[m, n, 1]]; If[k > max, max = k; zuobiao = {n - 1, L - m}], {m, 1, L}, {n, 1, l}]];
Return[zuobiao];
])
```

Out[9]=