

SMD soldering Basics Tools

Work on bright work surface

Temperature controlled soldering iron with Fine taper Tip

Soldering Iron stand + Damp wet sponge

Solder Leaded or Non leaded various sizes 0.5mm -0.6mm

Illuminated magnifier Or binocular microscope

Small Tweezers

Flux pen useful for placing SMD IC

“Plenty of time & patience Don't try to rush SMD work”

Static ! Precautions Basics

- Fit all decoupling capacitors and smaller components first
- Leave all Chips , Gassfets ,Phemts silicon till last If Possible
- Test, is your Iron Tip is ground ?
- Solder VDD & VSS pins first Or Drain & source on a Gassfet .
- Touch something Earthy before handling the Sensitive parts
- Avoid touching the IC pins pick & place using the Plastic package
- Work on a grounded work surface ! Remove when testing..

A few examples of Target SMD
Joints & common problem joints.

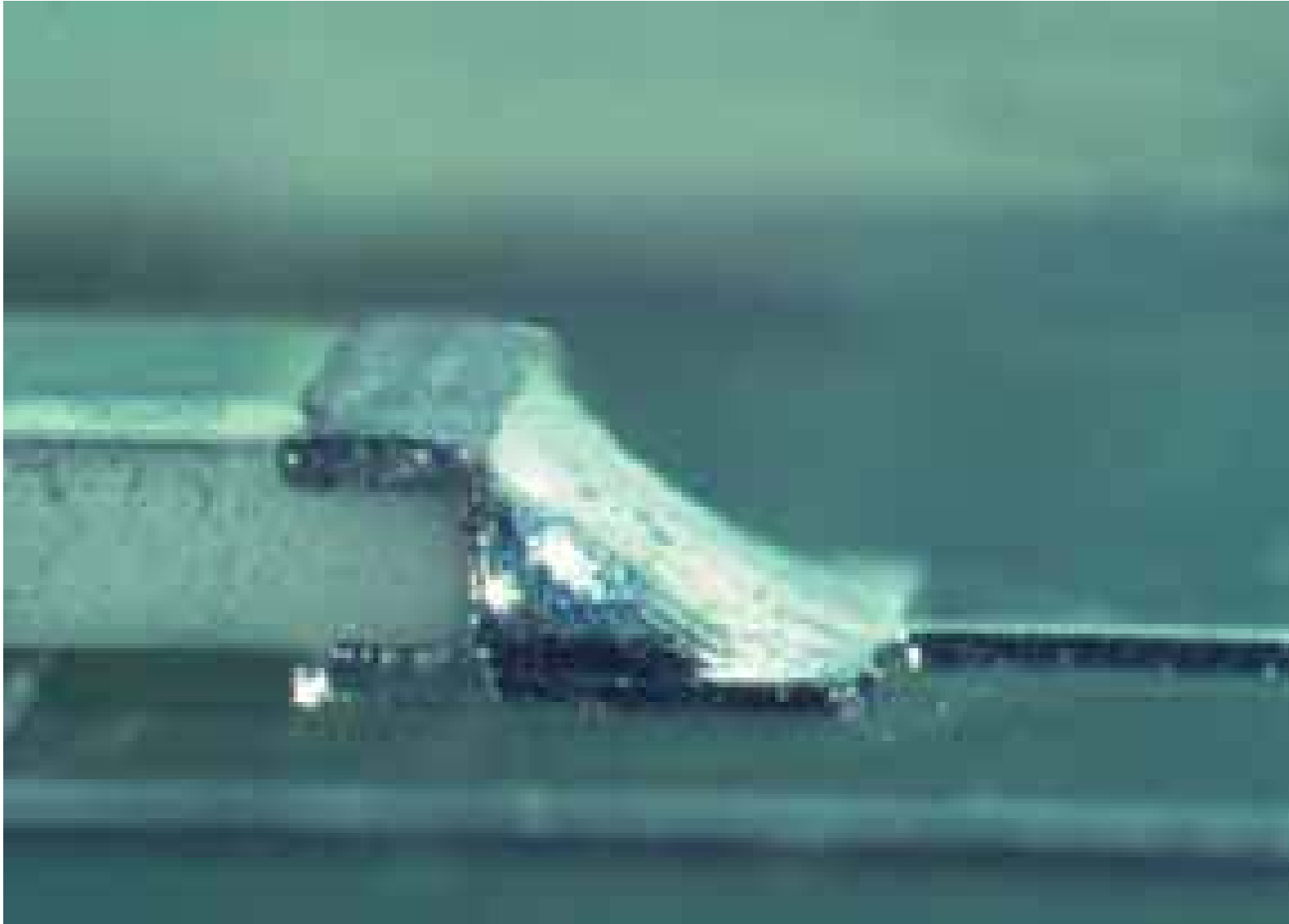
SMD soldering

Tips on How to Solder

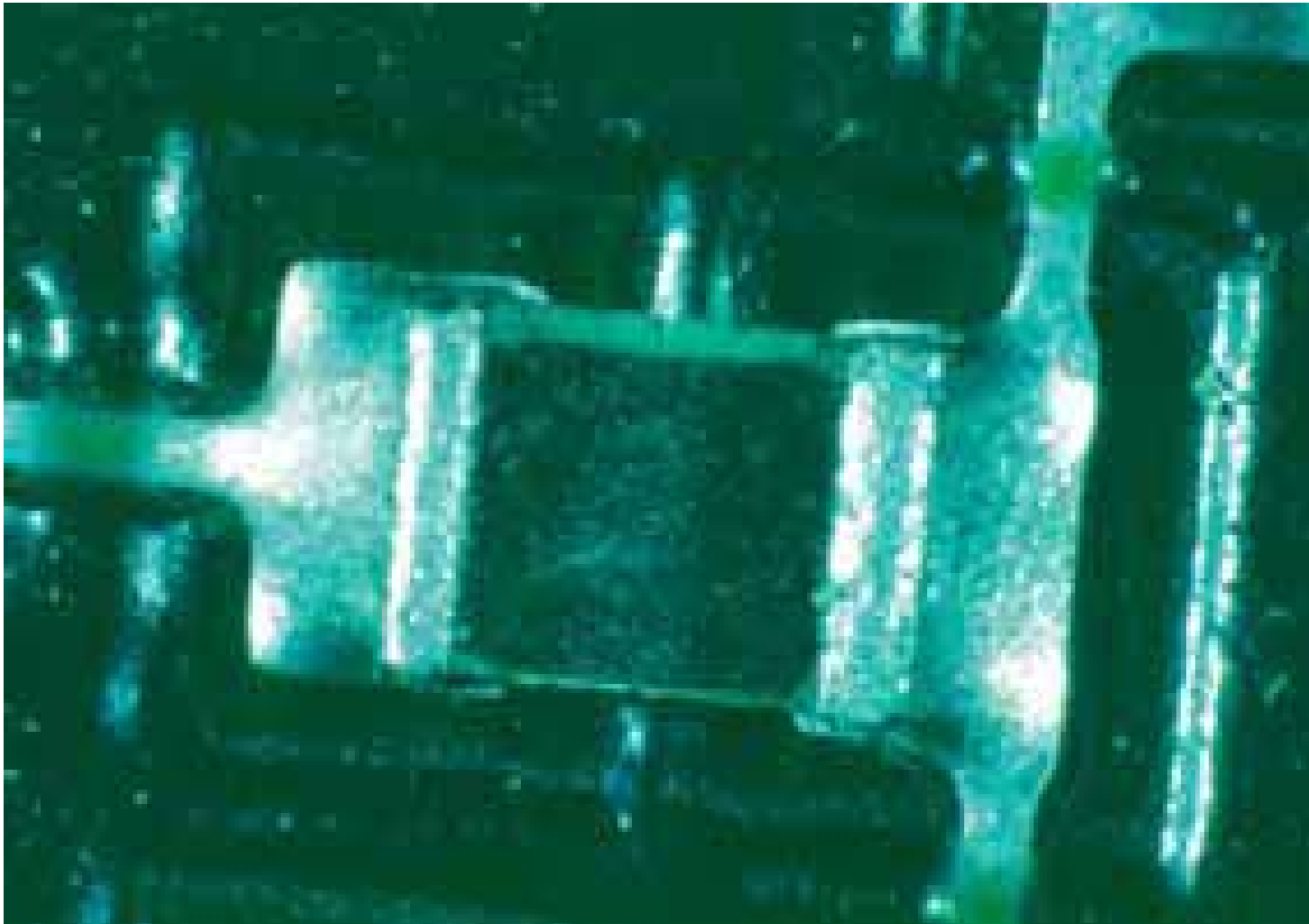
How to prepare your soldering iron:

1. Ensure soldering iron is in its stand and switch it on, allow for a few minutes while your iron heats up to the its full potential set at approx 365degrees
2. Run your sponge under a cold tap until it is damp, not soaking, place back on the stand.
3. Check that your Iron is at the optimal temperature by melting some solder on the tip of the iron.
4. Clean the tip of the soldering iron with your damp sponge Clean the iron tip regularly on the sponge

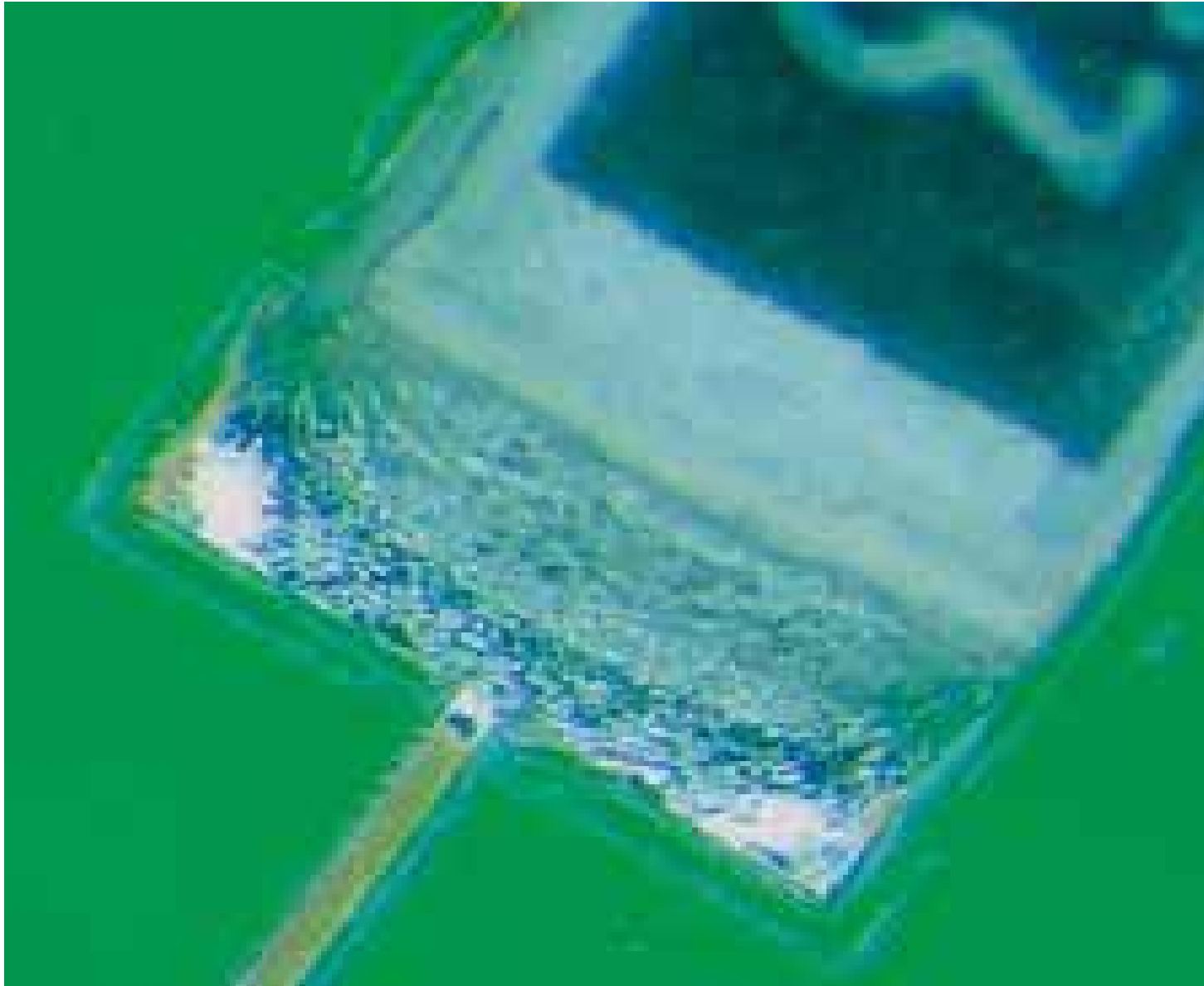
The ideal chip component SMD soldered Joint



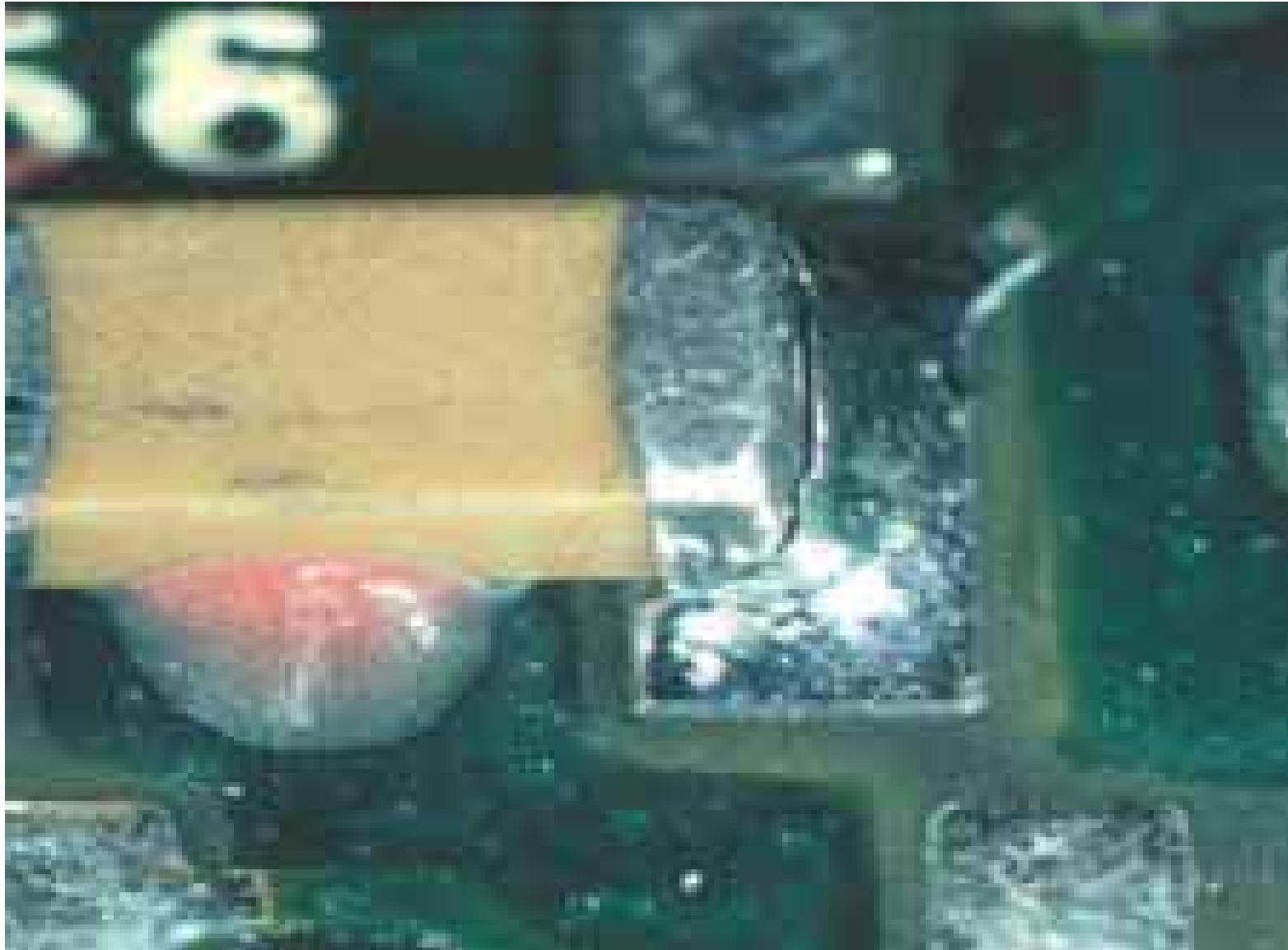
The ideal SMD Joint note smooth wetting on the land & resistor



Lead free joint! Much grainier & dull looking but electrically Sound



Cracked / fractured solder joint !!!



Disturbed joint .. Due to movement or soldering



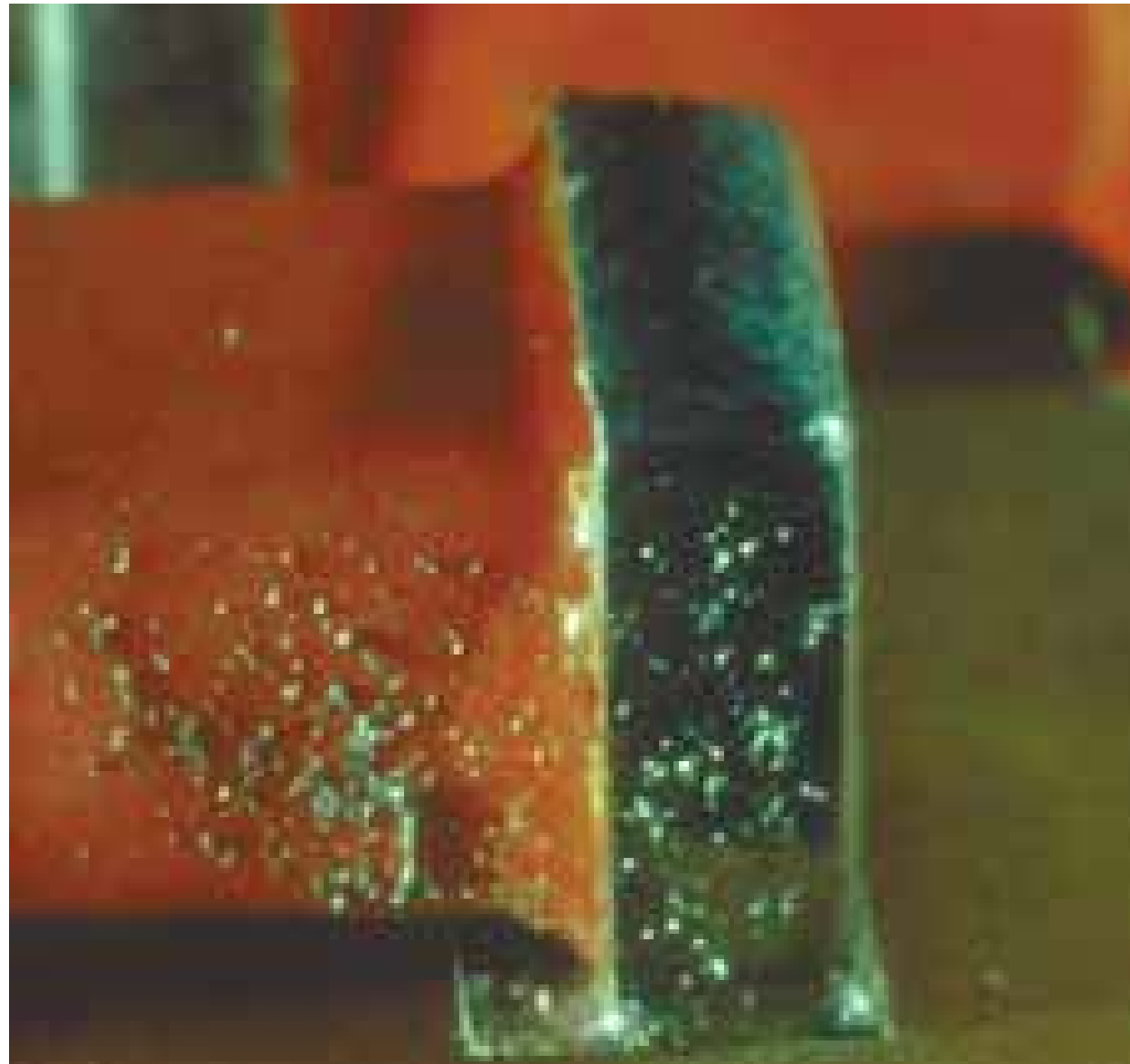
Bridged components requires careful iron Tip position to avoid wetting both pads



Solder splash from iron or Wave soldering process



Fine solder balls



Solder balls caused by out-gassing !



Ideal Gull wing! joint smooth wetting around pad & lead



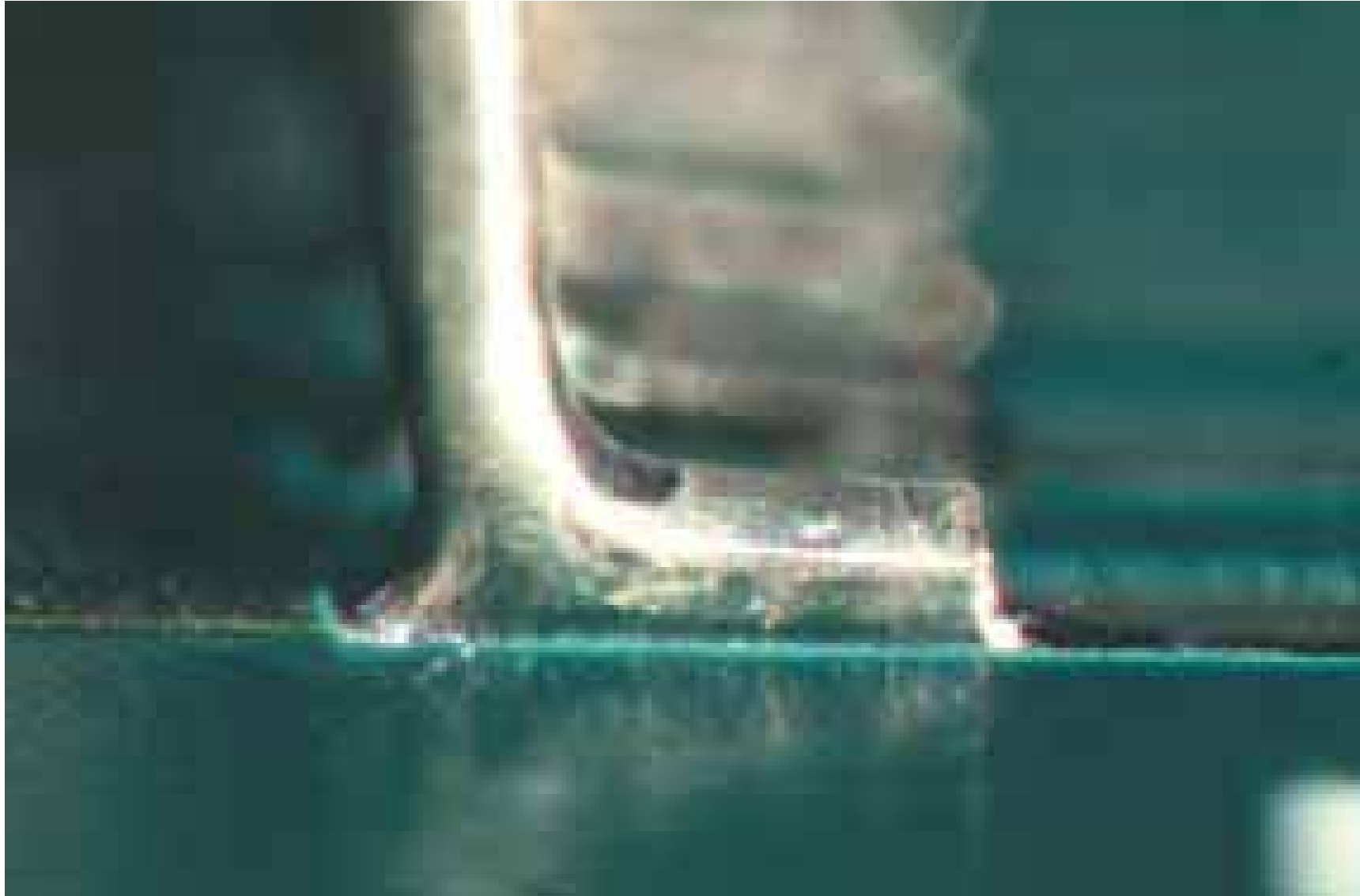
Only the IC lead wetted not the Pad .



Cracked disturbed joint Classic intermittent



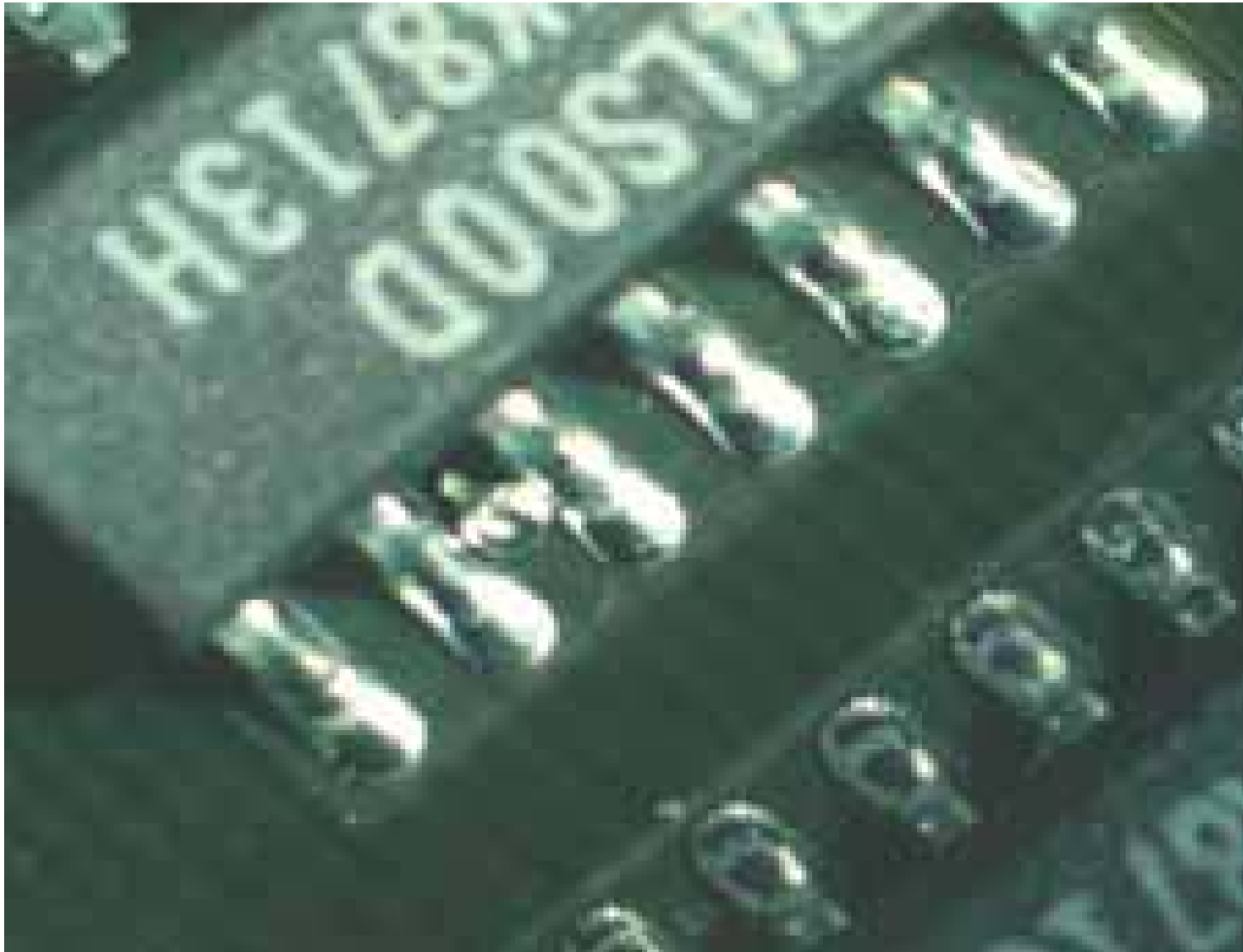
Ideal Gull wing component solder joint



Insufficient solder on land & Lead



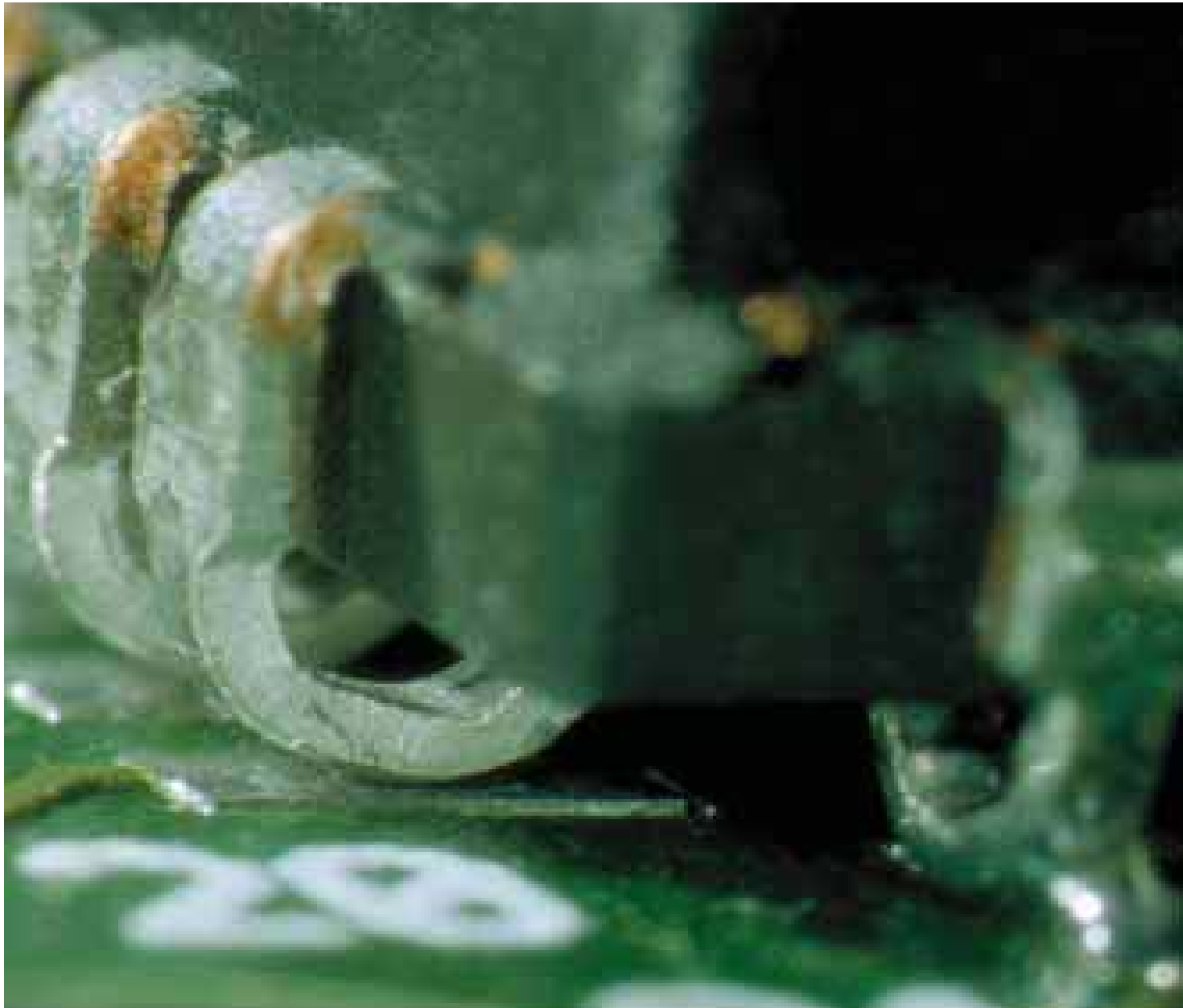
Solder Balls watch out for these! remove gently



Solder bridging & poor pad alignment



J Lead component, Non Wetting



J lead component Ideal joint



Tomb-stoning Normally seen during wave soldering



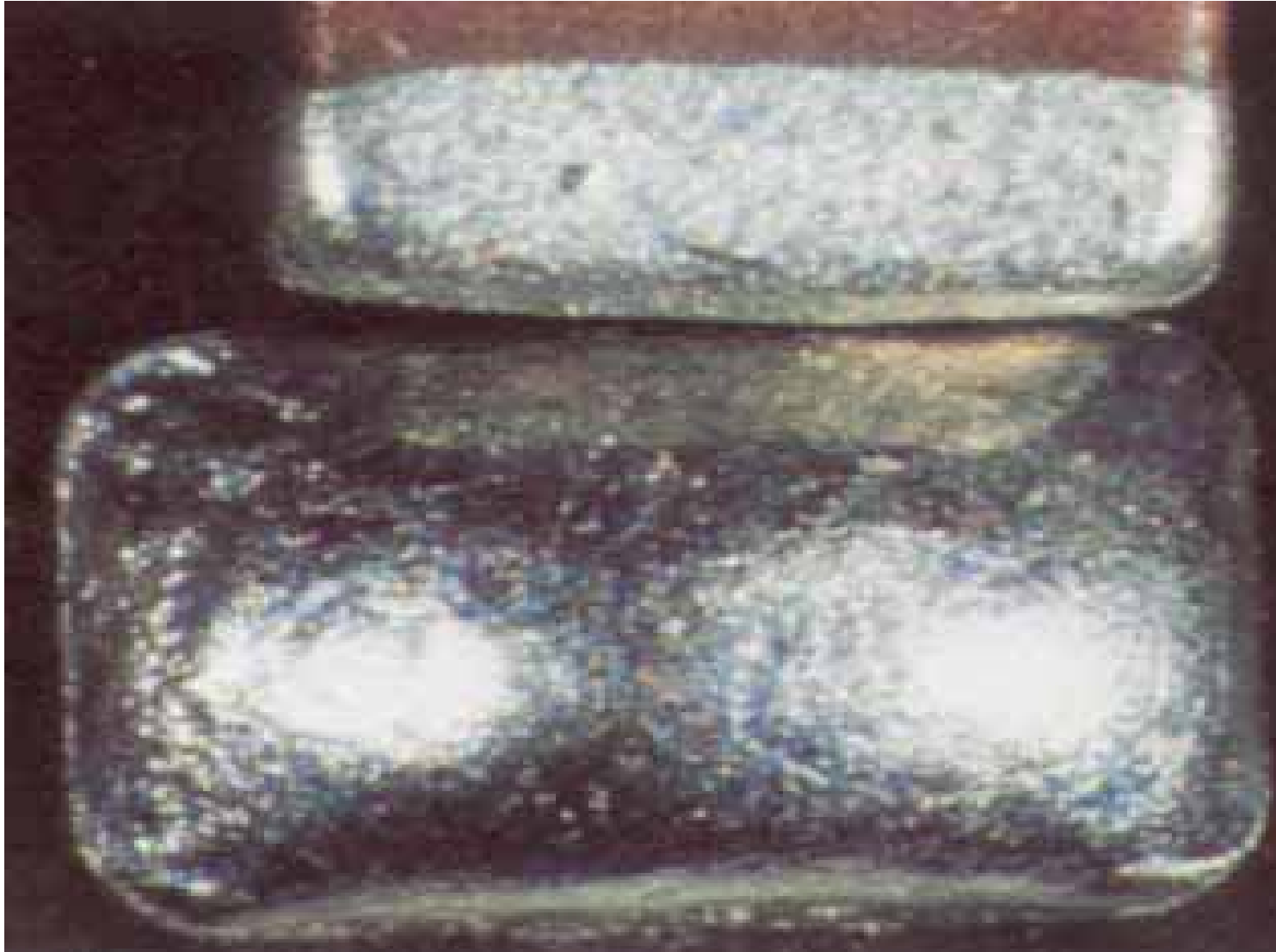
Excess solder covering the body of the Capacitor



Insufficient solder Land & end cap partial Wetting



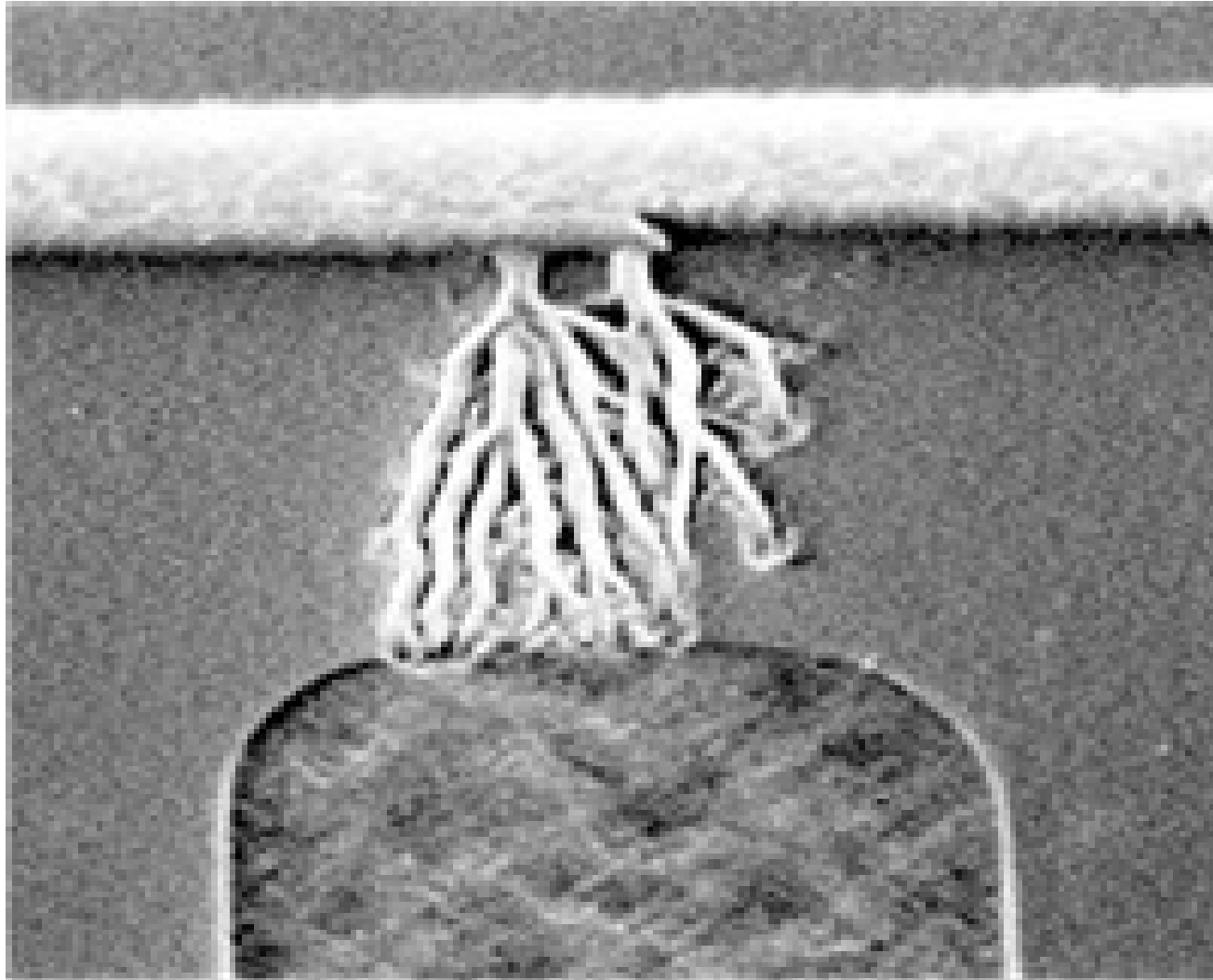
Poor alignment Insufficient overhang onto the Land Dry Joint



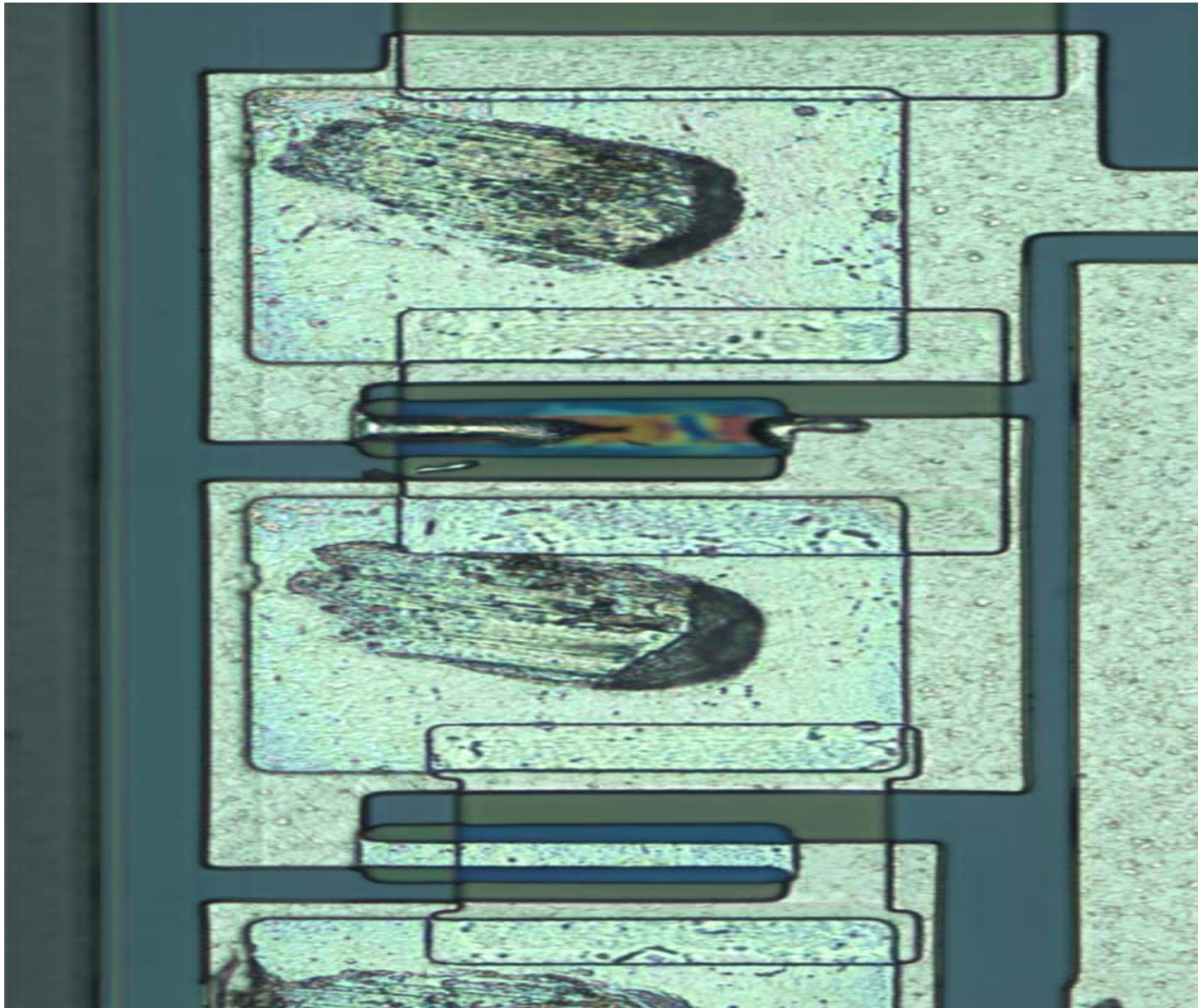
Lead free Joint electrically sound! but looks Grainy & dull



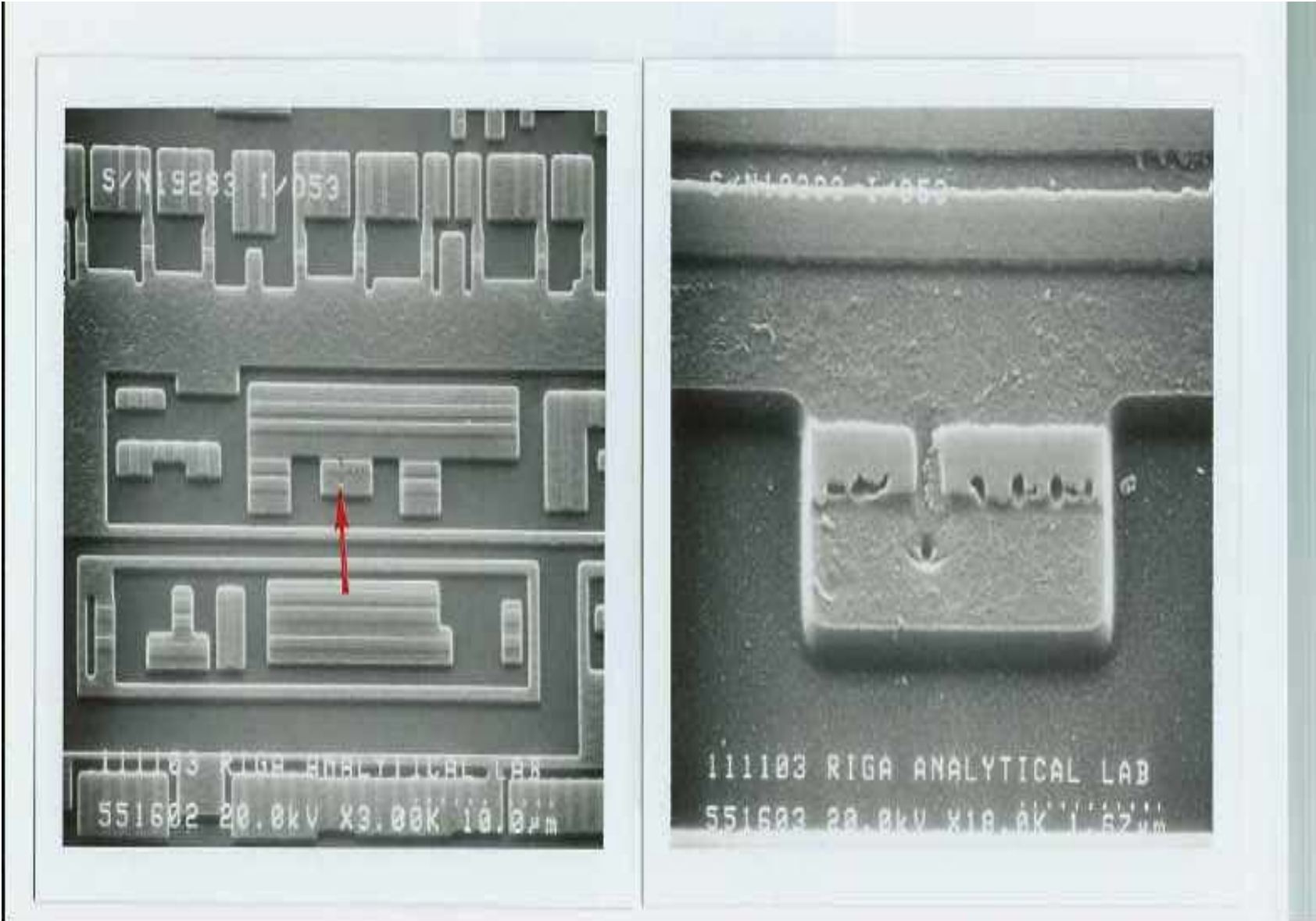
Static ! PrecautionsThe internal damage



SEM showing damaged gate .



Damaged transistor in Logic Chip output Pin Stuck high !



SMD soldering stations Weller WSP 80 WS 80 Iron



Thank-you

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