Turning a Ring (Acrylic or Wood)

Most of this information is based on Michael Nish's video on "Making a Wood Inlay Ring" @ https://www.youtube.com/watch?v=zj_cEiNPYqU

There are many examples of how to make inlay rings on YouTube, Michael Nish's is just one of many. For instance, Penn State Industries has a video on Making a Comfort Core Ring @ https://www.youtube.com/watch?v=n2V7ORXkvaA

Supplies needed:

- Carbide tools for acrylic or HSS tools for wood
- Ring core (Ceramic or a variety of metals)
- A pretty piece of wood or acrylic to turn
- Vernier calipers or similar accurate measuring device
- Ring bushing or ring mandrel
- Scroll chuck
- Waste block
- 2 part epoxy
- Thin CA glue
- Alcohol
- Double sided tape
- Lathe drill chuck
- Forstner bit to fit
- Small thin saw (i.e., small flexible flush cut saw)
- ***Optional:*** Magnifiers
- ***Optional:*** Boring head to expand size of inside hole (to be explained) – Available on Amazon, just look for boring head for lathe. If you don't want to use a boring head you can use a small turning tool to expand the hole size.

Sources of supply:

- ***Ring cores and ring blanks:*** Rockler.com, Woodcraft.com, Amazon.com, Woodturnerscatalog.com (Craft Supplies USA), Ringsupplies.com, opalandfindings.com, Pennstateind.com, Turnerswarehouse.com, Etsy.com, and more…
- ***Ring bushings and mounts:*** There are a bunch of variations… Rockler.com, Woodcraft.com, Amazon.com, Woodturnerscatalog.com (Craft Supplies USA), Ringsupplies.com, opalandfindings.com, Pennstateind.com, Turnerswarehouse.com, Etsy.com, and more…
- ***Optional boring head:*** Amazon.com, Woodturnerscatalog.com (Craft Supplies USA), Ringsupplies.com, and more…

Basic ring core types:

- Split core/2 piece – A two piece press or screw together ring
- Comfort core – Wood or acrylic goes all the way out to the edges which can be easily damaged
- Inlay core – The process I will describe in this document.
  Personal Note: there are variations of all kinds. Just be aware that if you find cheap ring cores be prepared that they may not be accurately sized, or the channels a consistent depth.

Steps for making a ring using an inlay ring core (stock of acrylic or wood):

- Pick your stock
  - Stabilized wood works best – interesting colors and grain. For the best results use side grain pieces.
  - Acrylic with solid colors – can be a mix of colors, just not translucent or transparent colors as they will show through to the metal base.

        - Option: Paint the channel

    Personal note: For smaller rings (i.e., 4mm wide ring with only a 2mm channel) brighter colors are better

    - Ensure the mounting side of the stock is flat
    - Clean the mounting side of the stock with alcohol
- Mount your stock on a waste block (i.e., double sided tape) with a flush face.
    - Waste block should be approximately 1/2 inch wider than ring blank when round
    - Make sure the face of the stock that you are mounting to the waste block is flat. If not, turn it to flat first.
    - Press the stock onto the waste block and hold it with the tailstock
- Rough turn blank to round with tailstock snug but not over tightened
    - Be gentle
    - Use sharp tools
    - Flatten the exposed face of stock
- Bore center out of stock
    - Measure diameter of lowest point of channel in ring.
    - Mark blank with target size
    - Using that measurement drill a hole in the blank smaller than channel measurement you took previously. Do this using a drill chuck drill and a Forstner bit.
    - Drill to the a little deeper than the width of the ring channel
    - If you have a boring head, mount that in your tail stock and expand the size of the drilled hold to match the channel measurement.
- If not using a boring tool
    - Use a very sharp tool to expand the size of the hole to the desired size. For wood, HSS tools are preferred, for acrylic I suggest carbide tools
    - You want the Vernier calipers to fit just a hair loose at the measurement you took from the channel depth
- Cut appropriate width for ring channel
    - Measure width of ring channel with your calipers
    - Mark the width on the side of the stock
    - Using a narrow parting tool part the piece off

      Personal note: I usually go ~1/64 inch and then re-measure the width. Adjust as needed. This is different in the Nish video as he parts off the excess and then uses what is still mounted.
    - If you have left the piece a little wider than desired, you can always part off the piece and sand it down to desired width.
- Preparing to mount the stock on the ring core
    - Double check measurements width and core diameter
    - Near the edge of the piece, mark one side in 4 quadrants with a marker
    - Using a small thin saw cut half way through one side of the stock band
    - Go to the other side of the stock and cut a similar slice in the other side
    - Mark one face of both sides of the stock so you know which way it goes back together
    - Mount the piece into a vise and break it in half along the cut lines
    - Carefully piece it back together and look for any gaps or missing pieces. If all went well and you got a really clean break you shouldn't be able to see the break.
    - Ease the edges of the stock on the inside radius
    - Test fit the two halves and place them around the ring core and make sure it fits
    - Fine tune fit as needed and make sure piece dry fits successfully
    - A perfect fit is very slightly loose and you should be able to spin the core slightly with the two halves fitted together around the core.

- Gluing stock to ring core
    - I think two part epoxy works best for this, but you can use any glue that works with mixed surfaces. CA glue can sometimes be too brittle
    - Clean the ring core and the stock piece with alcohol (IA, DNA or EA)
    - Put glue on the core and the blank halves
    - Use your previous marks to ensure you have the right sides facing the right way
      Personal note: Make sure that you have the correct sides matched up and squeeze out is very good. A little extra squeeze out is not a bad thing.
    - Clamp lightly together and let dry completely. Overnight is good.
- Turning the ring blank down to size
    - Clean any excess glue off of the core inside and edges
    - Set up the lathe with a ring turning chuck or pen blank with ring bushings
    - Turning speed ~2,500 RPM
    - Be careful contacting cutting tools to the core as it may scratch. Take your time and ***be gentle and patient***. These are small pieces of material and can break easily.
    - For acrylic stock – Turn the excess off until flush with the ring core
    - For wood stock – Turn the excess off until flush with the ring core.
        - Once turned flush with the edges of the core turn wood a hair width deeper leaving a very slight edge of the core proud.
    - Clean with alcohol and let dry
    - When dry, polish the surface
        - Acrylic
            - Start with 240 grit and run through grits to 12,000
            - 3 buffing wheel process. Start with Green, then Blue, then final buff with a clean wheel.
        - Wood
            - Start with 240 grit and run through grits to 800
            - At slow speed ~60 - ~400 RPM
            - Use shop towel or paper towel and put a layer of THIN CA glue on the wood. Just 4-6 seconds moving back and forth across the wood and then let it dry. Apply 8-10 coats and give plenty of time to soak in and dry between coats, or use a small amount of activator.
            - Once completely dry gently turn off the excess glue then lightly sand finish by going through the grits up to desired finish
            - 3 buffing wheel process. Start with Green, then Blue, then final buff with a clean wheel.