

CLAIMS

1. An electrosurgical instrument comprising:
a flexible coaxial cable configured to convey microwave
5 energy;
a radiating tip portion connected at a distal end of the
coaxial cable and configured to receive the microwave energy,
wherein the radiating tip portion comprises:
a proximal coaxial transmission line for conveying
10 the microwave energy; and
a distal needle tip mounted at a distal end of the
coaxial transmission line,
wherein the distal needle tip is configured to operate as
a half wavelength transformer to deliver the microwave energy
15 from the distal needle tip.
2. An electrosurgical instrument according to claim 1,
wherein the radiating tip portion comprises an intermediate
coaxial transmission line between the proximal coaxial
20 transmission line and the distal needle tip.
3. An electrosurgical instrument according to claim 1
or 2, wherein the proximal coaxial transmission line
comprises:
25 an inner conductor that extends from a distal end of the
flexible coaxial cable, the inner conductor being electrically
connected to an centre conductor of the flexible coaxial
cable;
a proximal dielectric sleeve mounted around the inner
30 conductor; and
a outer conductor mounted around the proximal dielectric,
wherein the distal needle tip comprises a distal
dielectric sleeve mounted around the inner conductor, and
wherein a distal portion of the outer conductor overlays
35 a proximal portion of the distal dielectric sleeve.
4. An electrosurgical instrument according to claim 3,
wherein the inner conductor has a diameter that is less than
the diameter of the centre conductor of the flexible coaxial
40 cable.

5. An electrosurgical instrument according to claim 3 or 4, wherein the radiating tip portion is secured to the flexible coaxial cable by a collar mounted over a junction therebetween.

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6. An electrosurgical instrument according to claim 5, wherein the collar is conductive and electrically connects the outer conductor with an outer conductor of the flexible coaxial cable.

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7. An electrosurgical instrument according to any one of claims 3 to 6, wherein the distal dielectric sleeve has a bore formed therethrough for receiving the inner conductor, and wherein the distal needle tip further comprises a tip element mounted at a distal end of the distal dielectric sleeve to close the bore.

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8. An electrosurgical instrument according to any one of claims 3 to 7, wherein a distal end of the distal dielectric sleeve is sharpened.

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9. An electrosurgical instrument according to any one of claims 3 to 8, wherein distal dielectric sleeve is made from a different material to the proximal dielectric sleeve.

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10. An electrosurgical instrument according to any one of claims 3 to 9, wherein the distal dielectric sleeve is any of ceramic, polyether ether ketone (PEEK), glass-filled PEEK.

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11. An electrosurgical instrument according to any preceding claim, wherein the radiating tip portion has a length equal to or greater than 40 mm.

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12. An electrosurgical instrument according to any preceding claim, wherein the radiating tip portion has a maximum outer diameter equal to or less than 1.2 mm.

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13. An electrosurgical instrument according to any preceding claim, wherein a microwave choke or balun is fabricated on an outer surface of the proximal coaxial transmission line.

14. An electrosurgical apparatus comprising:
a surgical scoping device having an instrument cord
configured to be insertable into a patient's body, wherein the
instrument cord has an instrument channel formed therethrough;
5 and
an electrosurgical instrument according to any preceding
claim dimensioned to be insertable through the instrument
channel.
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15. An electrosurgical apparatus according to claim 14,
wherein the surgical scoping device is an ultrasound-enabled
endoscope.