Supplementary material

Consideration for a revised Gaussian-pencil-beam-model reported for calculation of the in-water dose caused by clinical electron-beam irradiation

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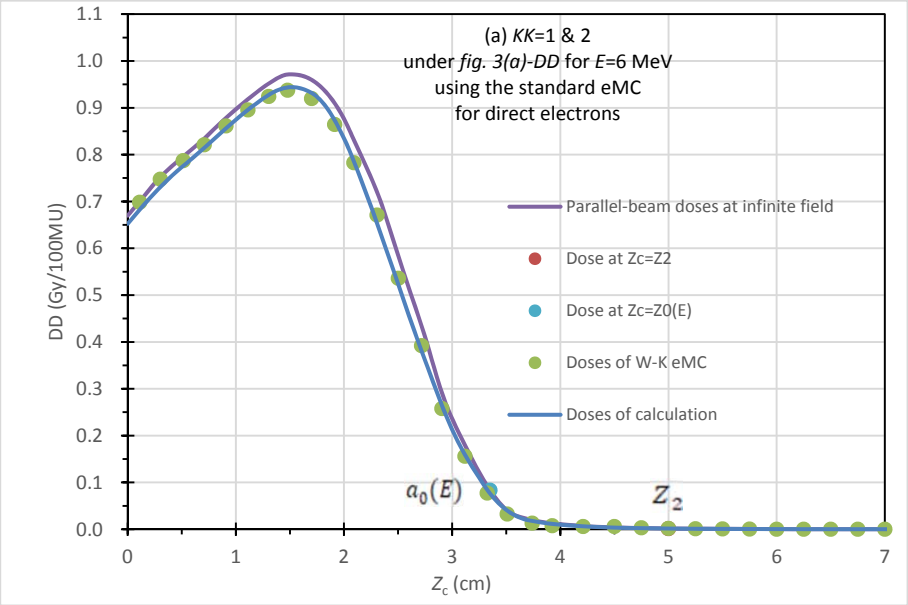
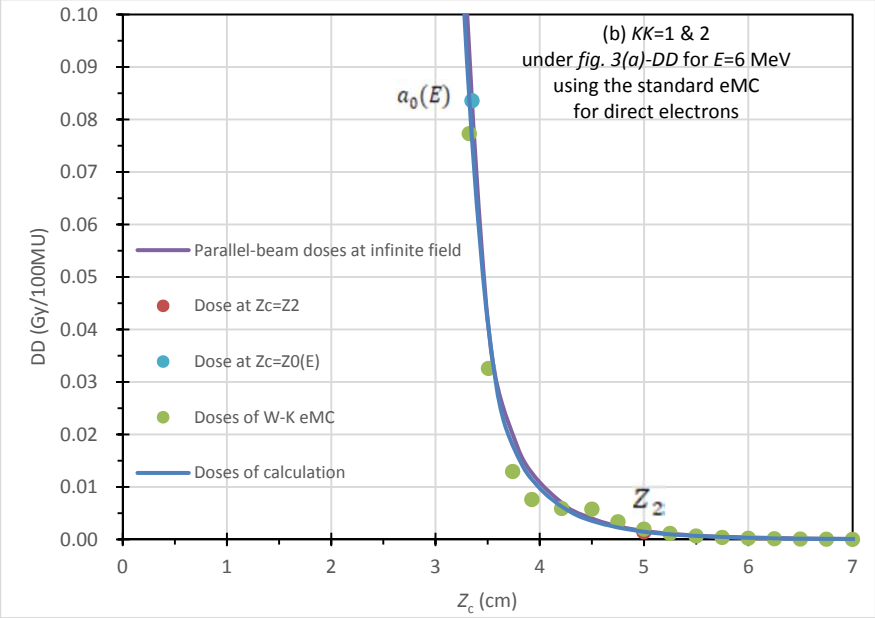
Supplementary Figures (Supp. Fig.):- Start Supp. Fig. no. from 3 to 14.



(a)



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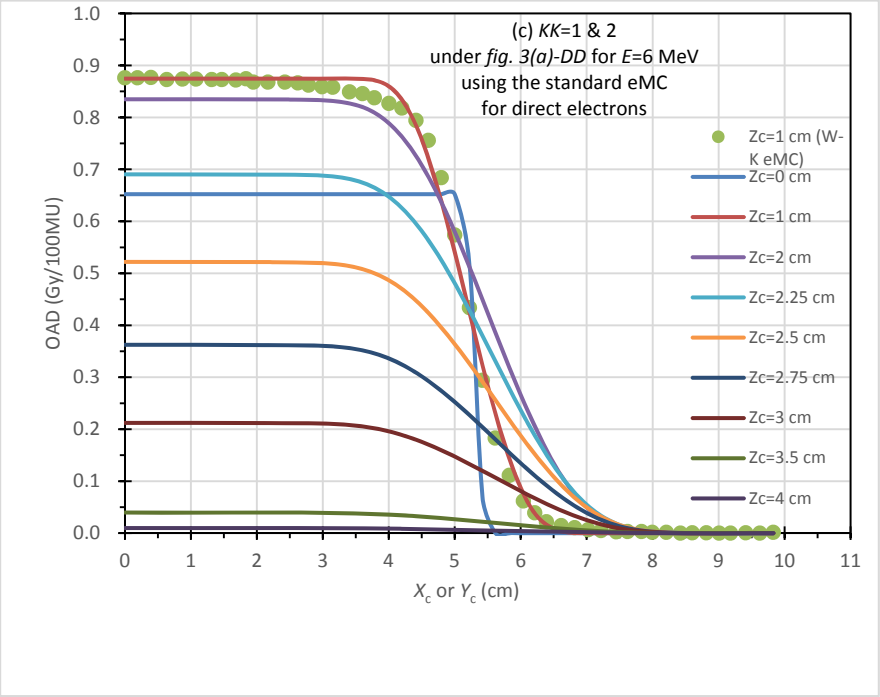
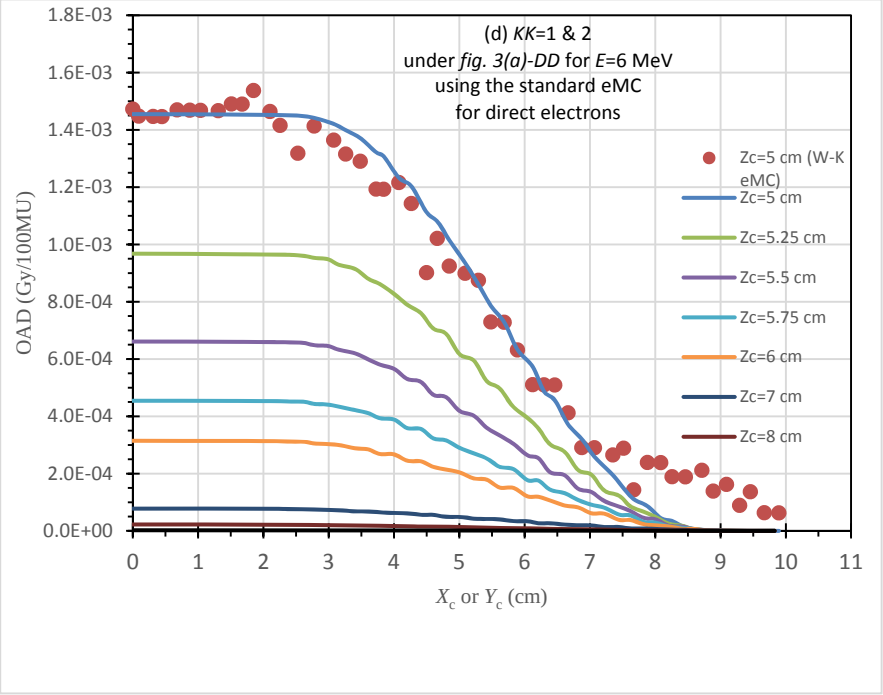
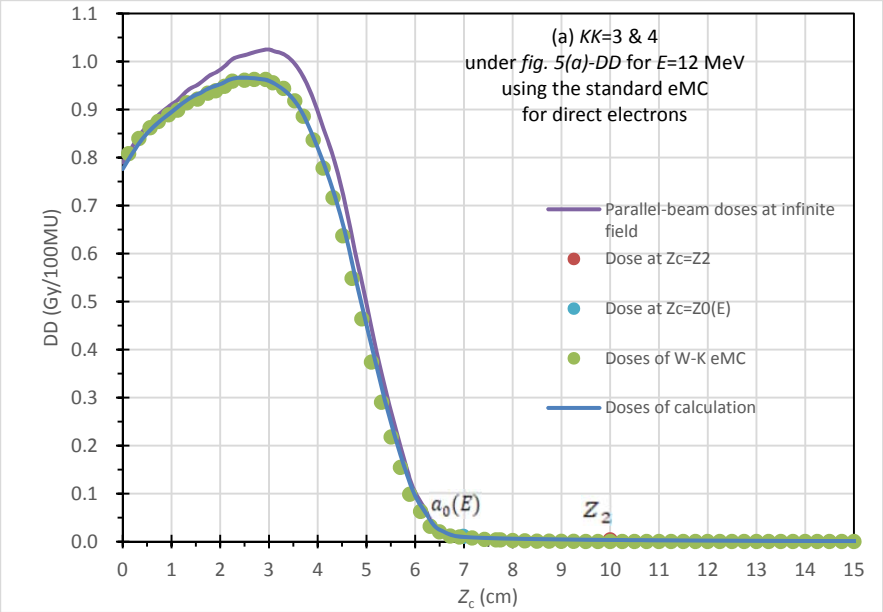


(c)

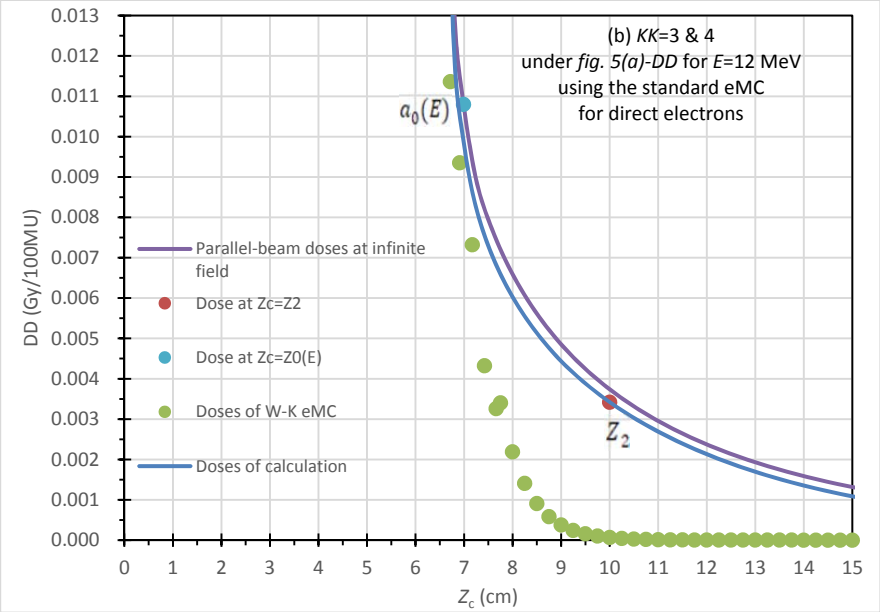


(d)

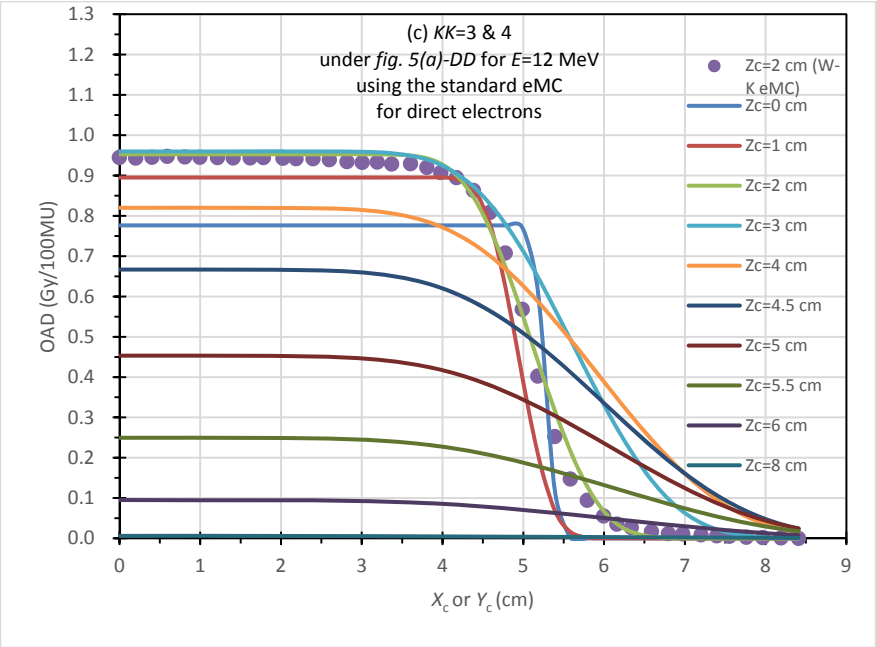
Supp. Fig. 3 DD or OAD datasets due to the direct electron beams for each of (a-d) with respect to *KK*=1 and 2 (*E*=6 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the standard eMC, copied from the W-K eMC dose datasets.


(a) KK=3 & 4
under fig. 5(a)-DD for E=12 MeV
using the standard eMC
for direct electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
DD (Gy/100MU)
$a_0(E)$
Z_2
Z_c (cm)

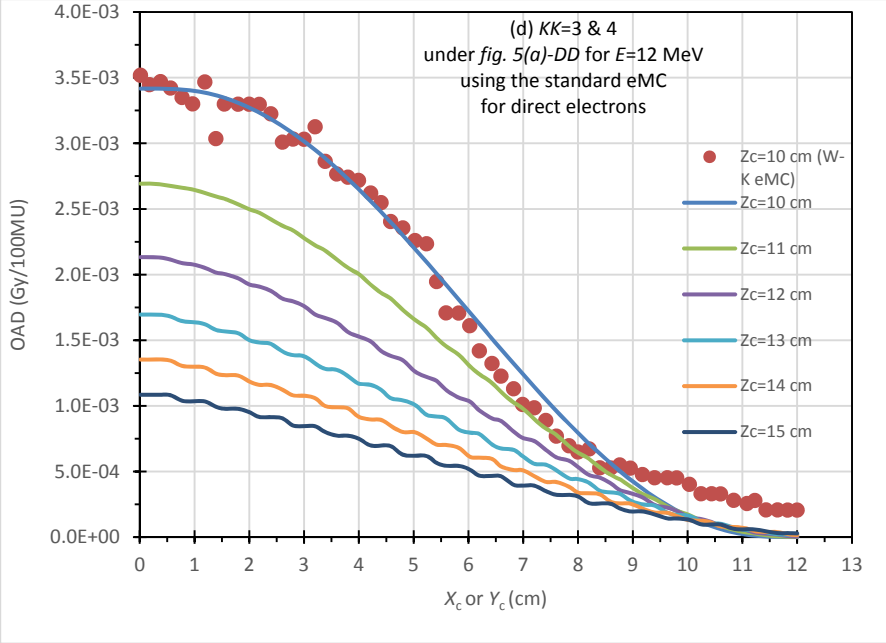
(a)


(b) KK=3 & 4
under fig. 5(a)-DD for E=12 MeV
using the standard eMC
for direct electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
DD (Gy/100MU)
$a_0(E)$
Z_2
Z_c (cm)

(b)

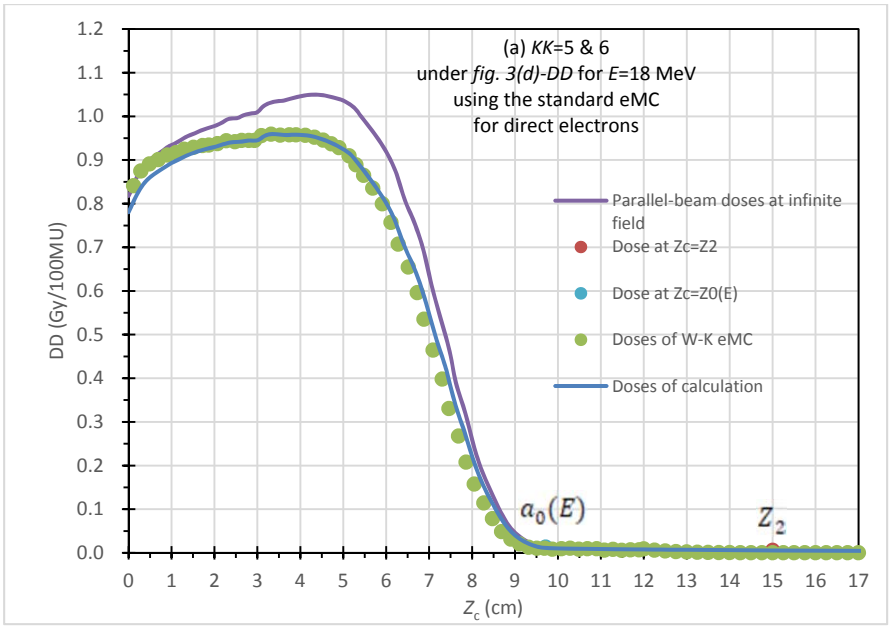


(c)

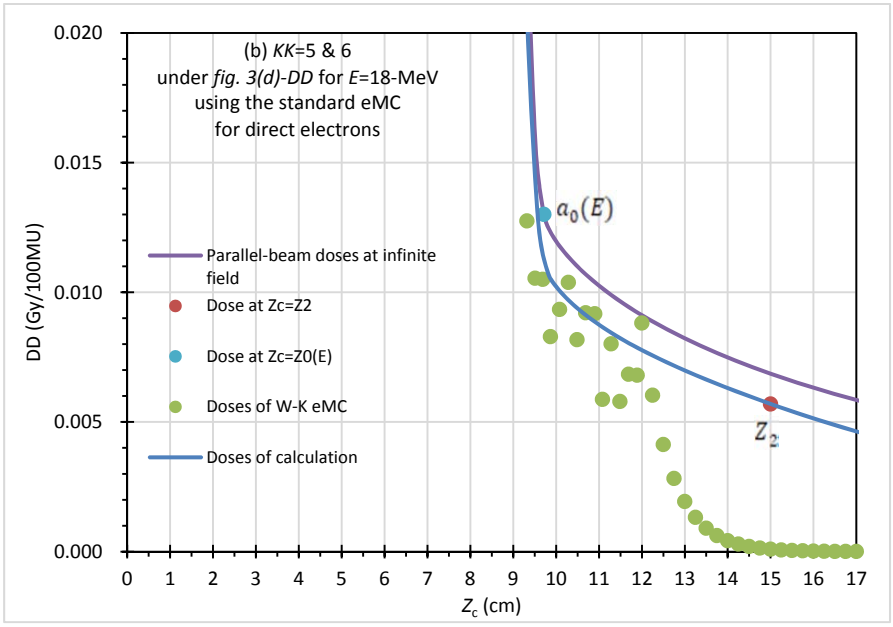


(d)

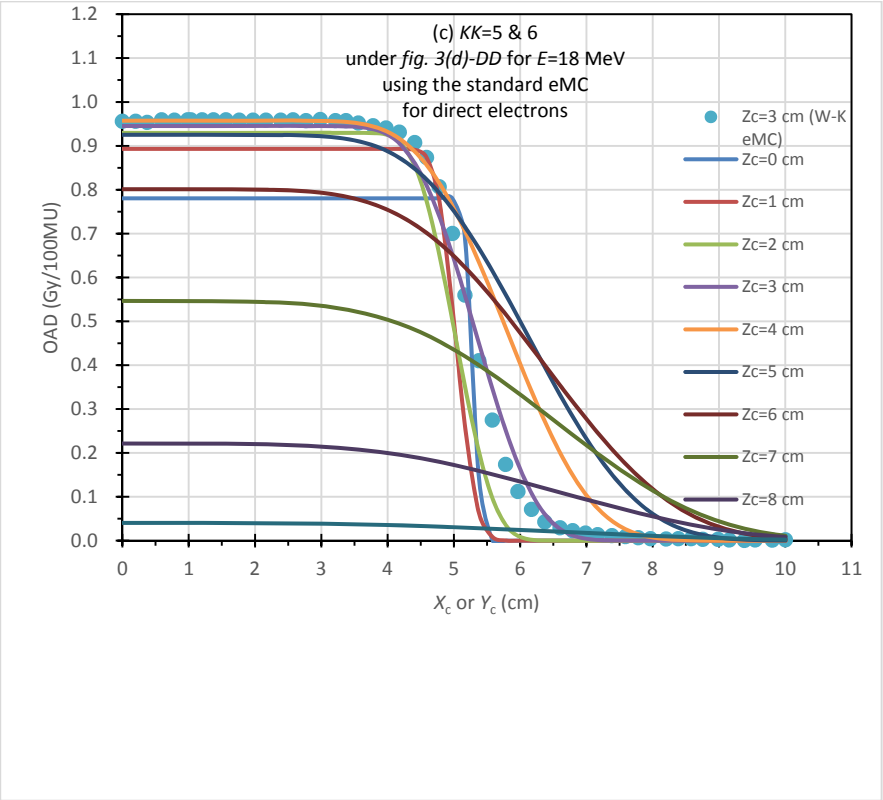
Supp. Fig. 4 DD or OAD datasets due to the direct electron beams for each of (a-d) with respect to *KK*=3 and 4 (*E*=12 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the standard eMC, copied from the W-K eMC dose datasets.


(a) KK=5 & 6
under fig. 3(d)-DD for E=18 MeV
using the standard eMC
for direct electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(a)


(b) KK=5 & 6
under fig. 3(d)-DD for E=18-MeV
using the standard eMC
for direct electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(b)



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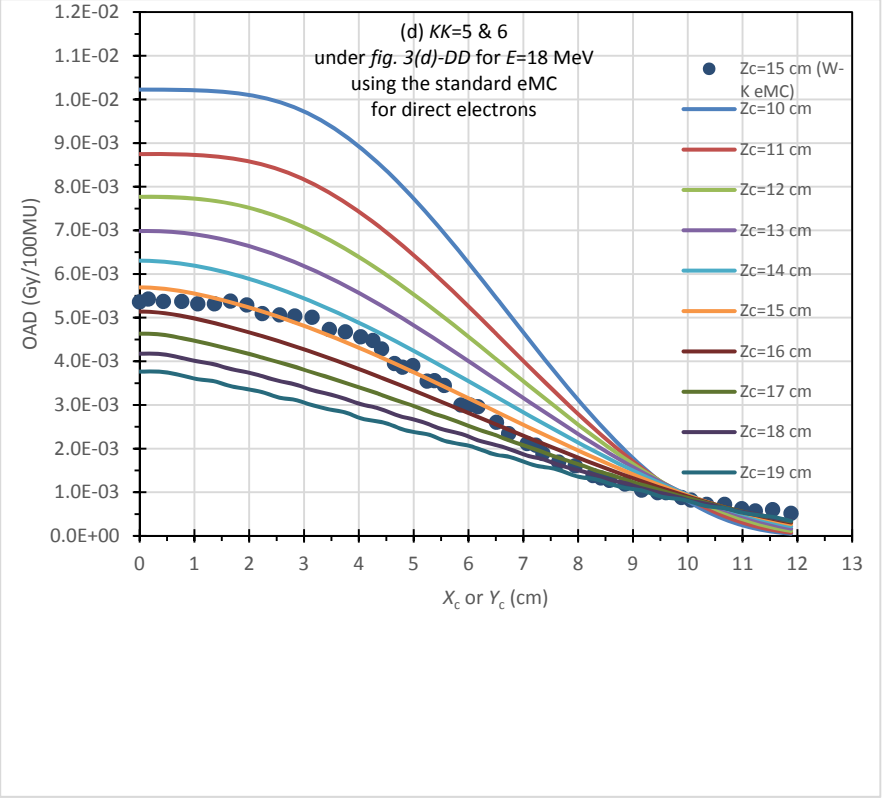
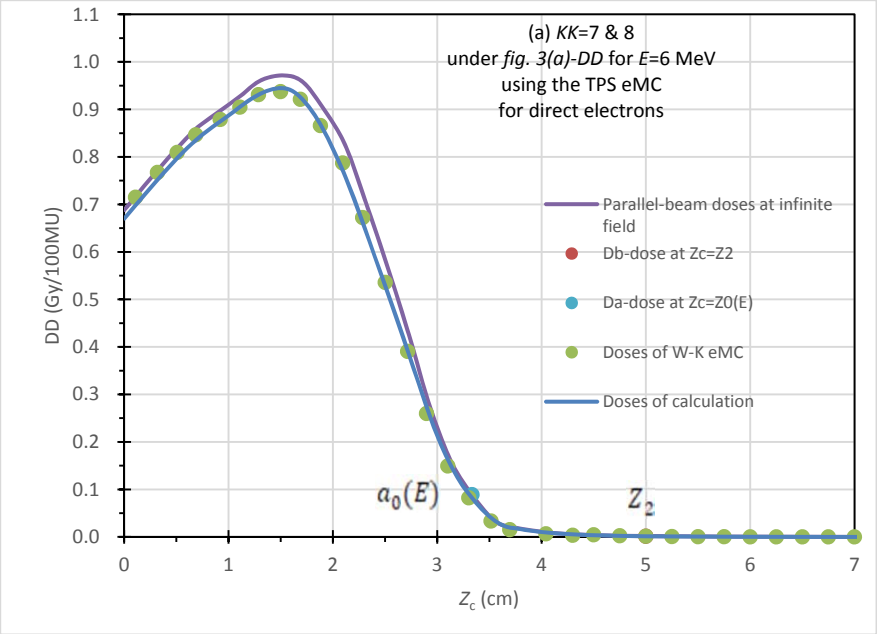
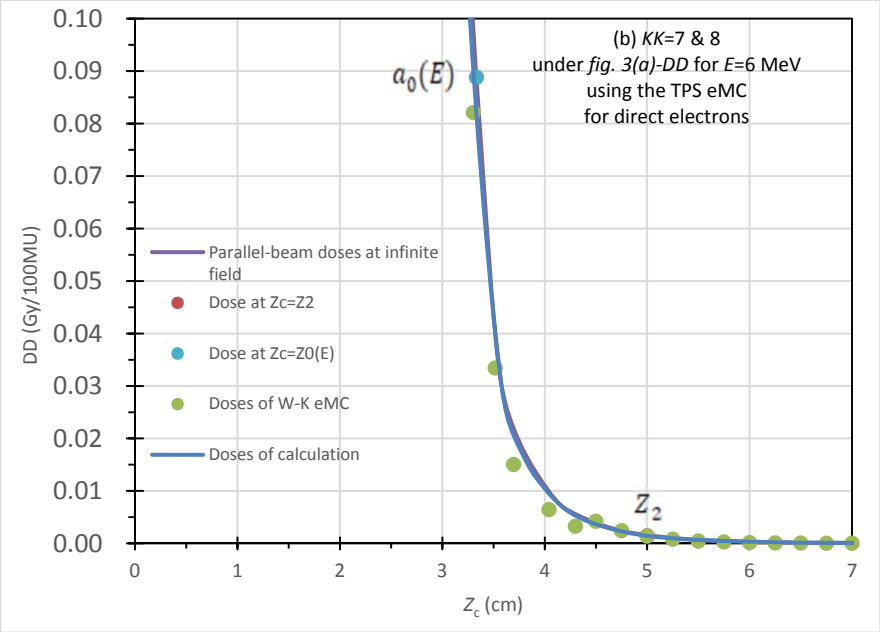


(d)

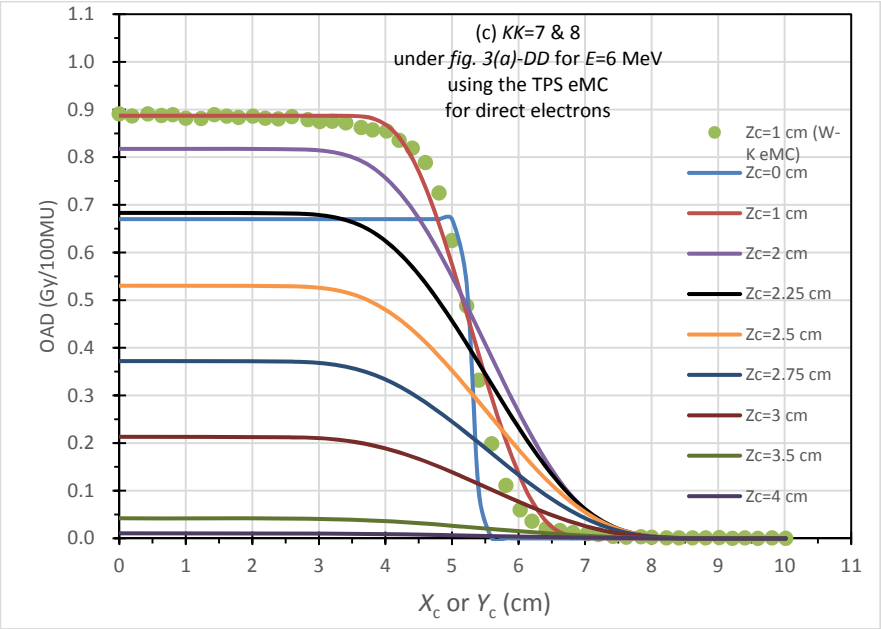
Supp. Fig. 5 DD or OAD datasets due to the direct electron beams for each of (a-d) with respect to *KK*=5 and 6 (*E*=18 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the standard eMC, copied from the W-K eMC dose datasets.


(a) KK=7 & 8
under fig. 3(a)-DD for E=6 MeV
using the TPS eMC
for direct electrons
Parallel-beam doses at infinite field
Db-dose at Zc=Z2
Da-dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(a)


(b) KK=7 & 8
under fig. 3(a)-DD for E=6 MeV
using the TPS eMC
for direct electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(b)



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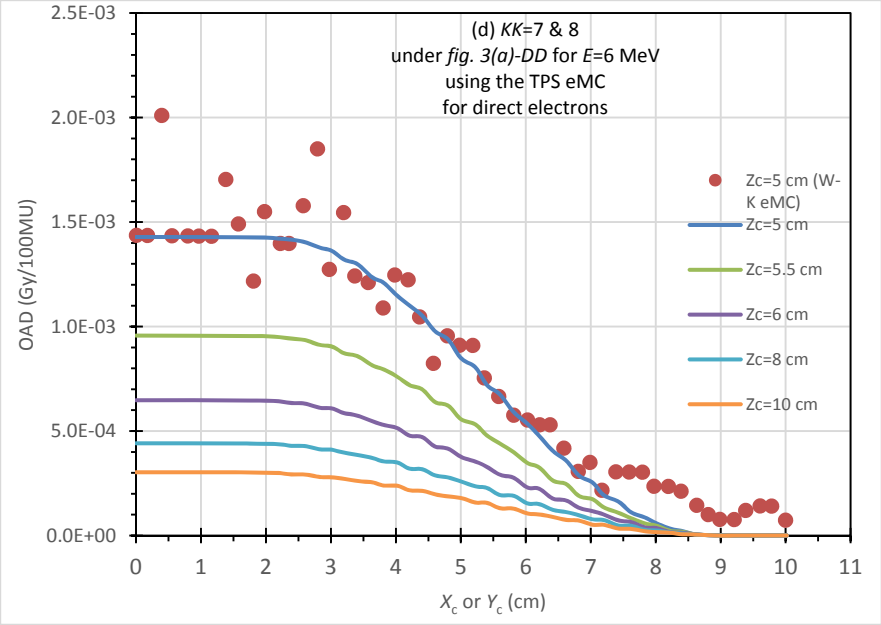
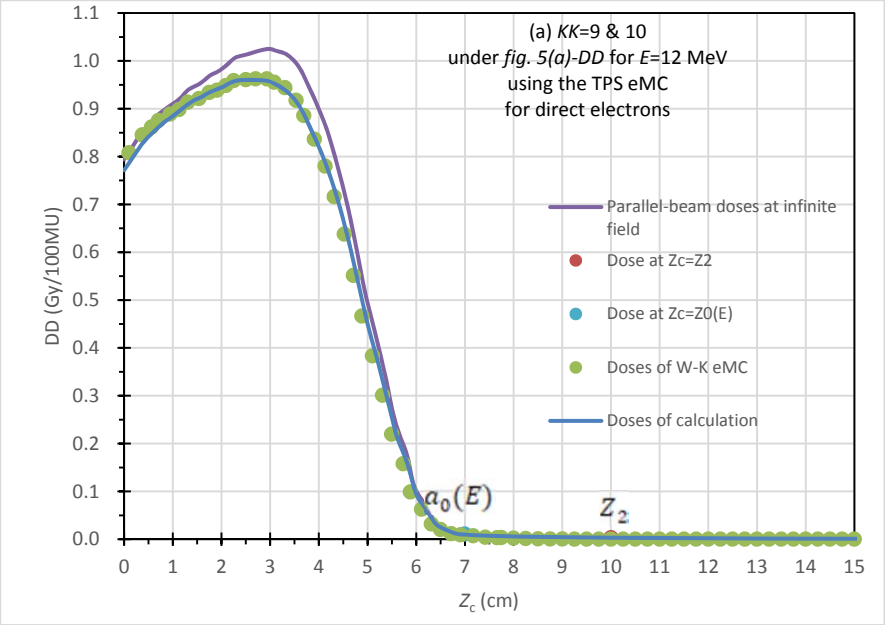
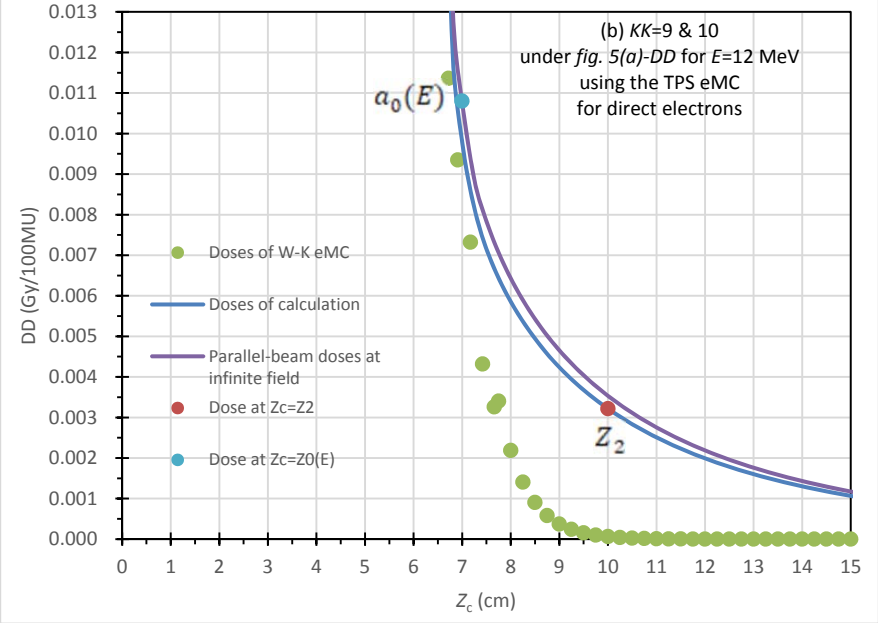


(d)

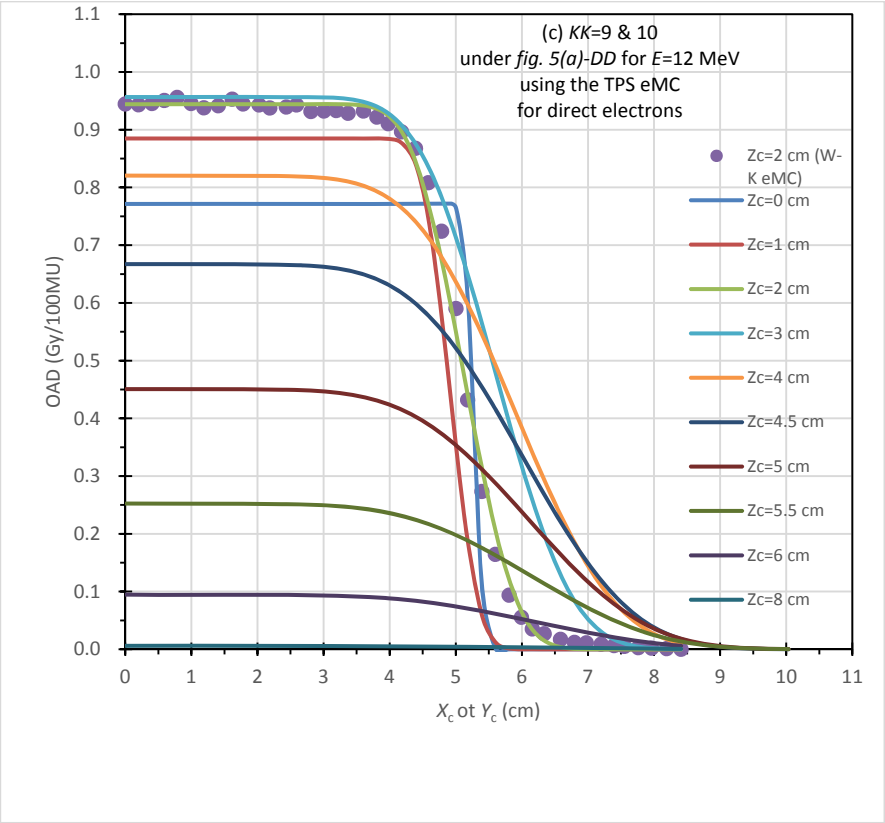
Supp. Fig. 6 DD or OAD datasets due to the direct electron beams for each of (a-d) with respect to *KK*=7 and 8 (*E*=6 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the TPS eMC, copied from the W-K eMC dose datasets.


(a) KK=9 & 10
under fig. 5(a)-DD for E=12 MeV
using the TPS eMC
for direct electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(a)


(b) KK=9 & 10
under fig. 5(a)-DD for E=12 MeV
using the TPS eMC
for direct electrons
$a_0(E)$
Doses of W-K eMC
Doses of calculation
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Z_2
DD (Gy/100MU)
Z_c (cm)

(b)



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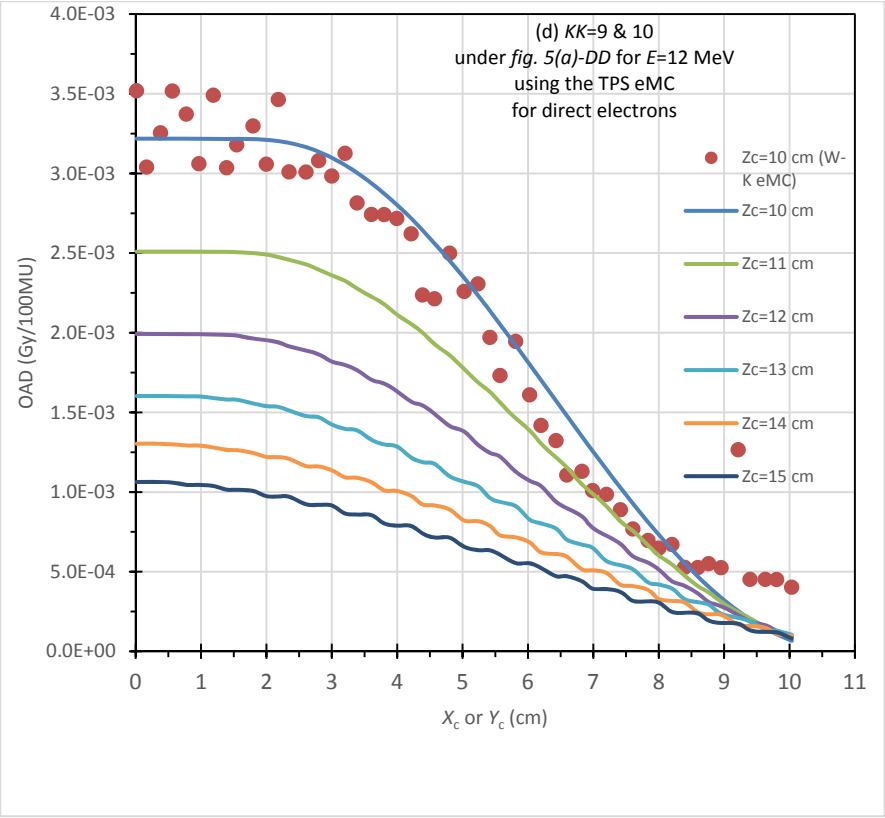
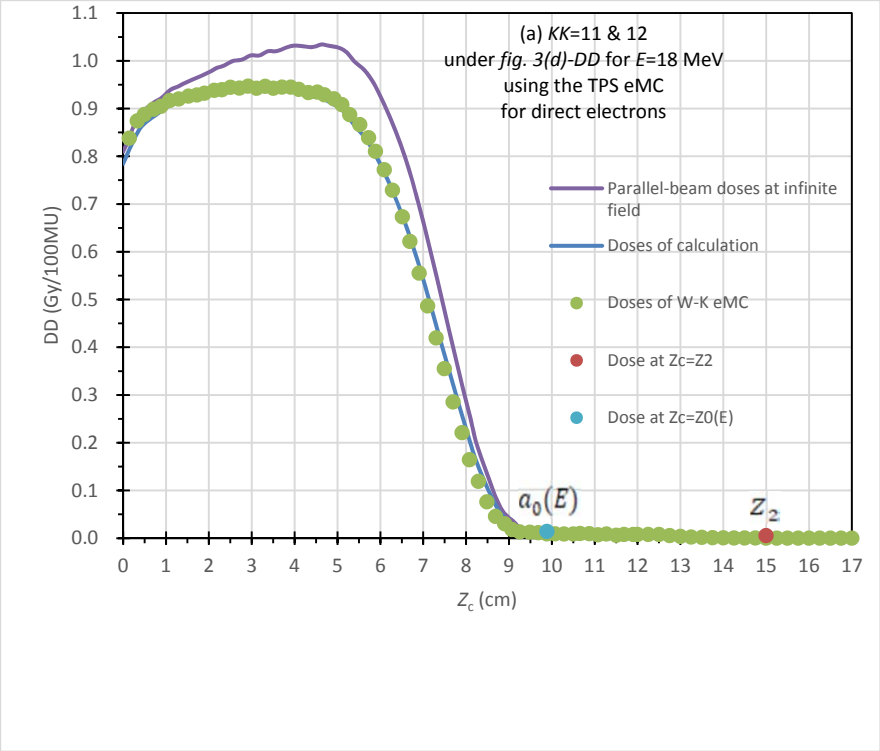
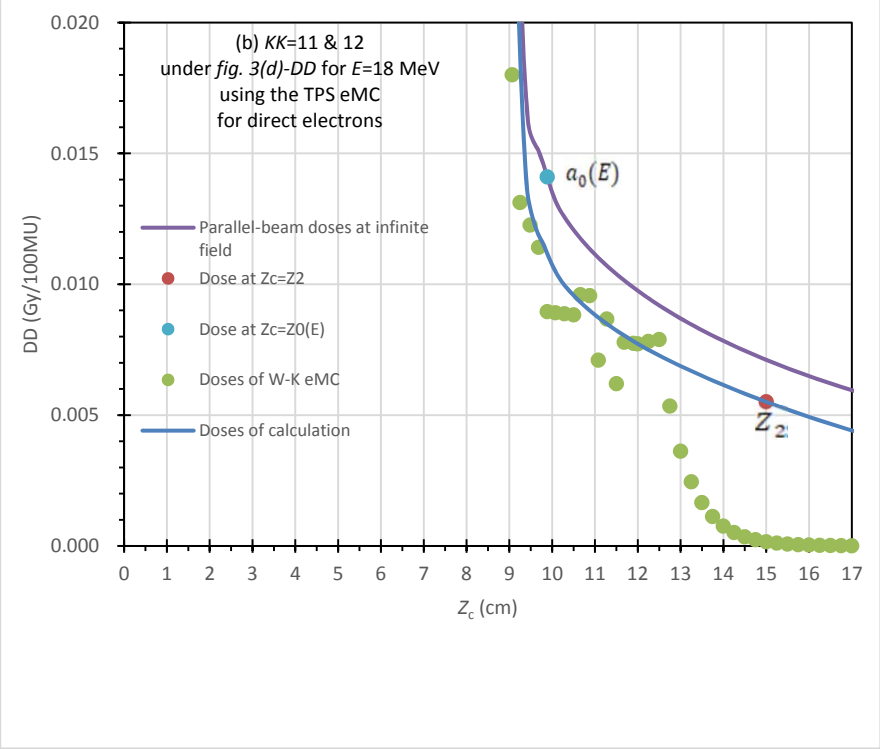


(d)

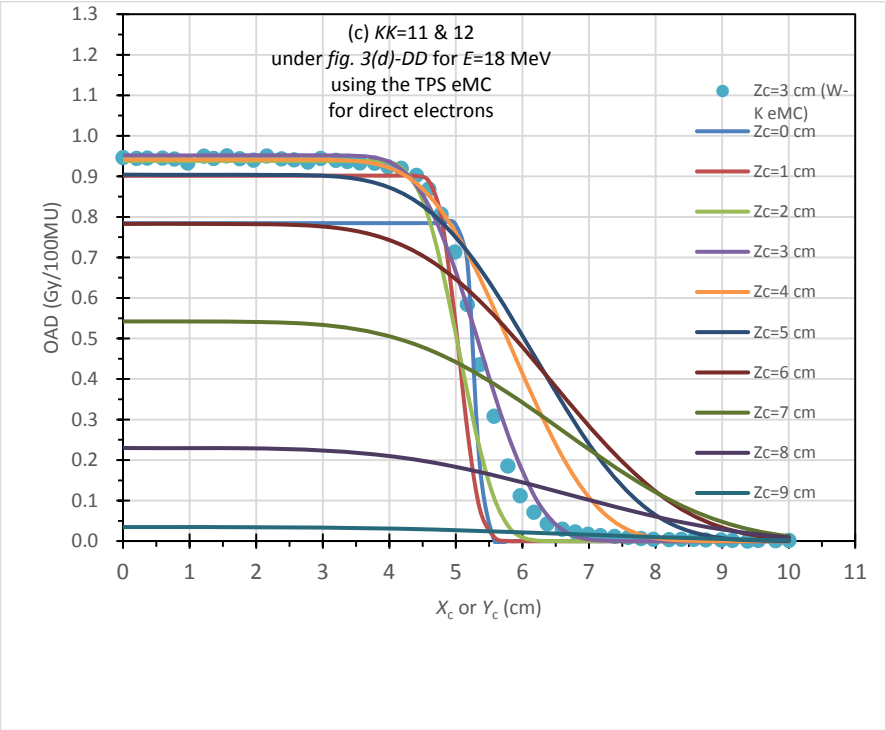
Supp. Fig. 7 DD or OAD datasets due to the direct electron beams for each of (a-d) with respect to *KK*=9 and 10 (*E*=12 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the TPS eMC, copied from the W-K eMC dose datasets.


(a) KK=11 & 12
under fig. 3(d)-DD for E=18 MeV
using the TPS eMC
for direct electrons
Parallel-beam doses at infinite field
Doses of calculation
Doses of W-K eMC
Dose at Zc=Z2
Dose at Zc=Z0(E)
DD (Gy/100MU)
Z_c (cm)
$a_0(E)$
Z_2

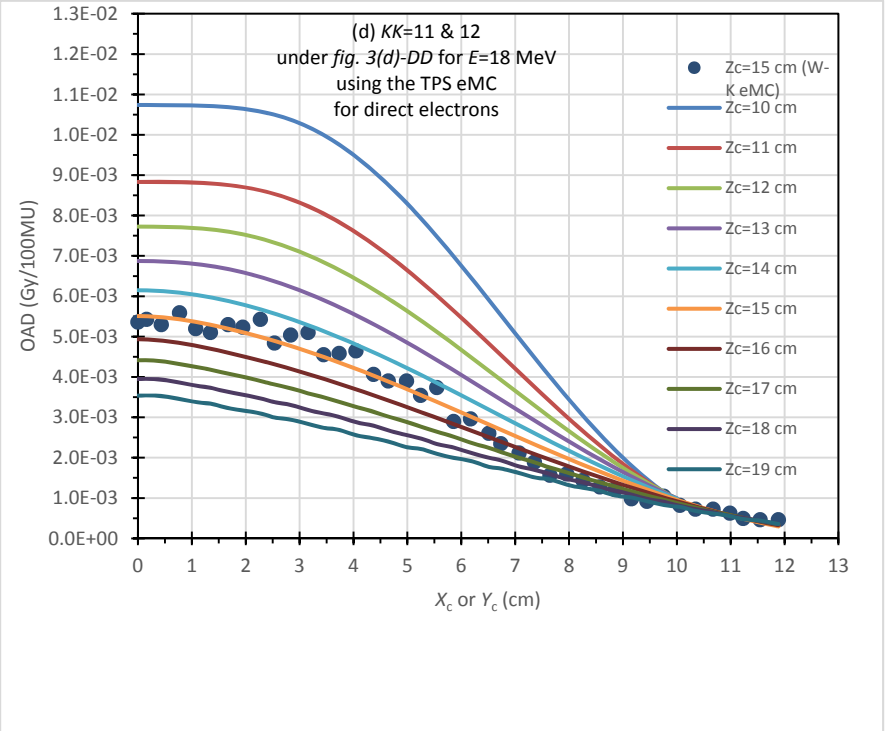
(a)


(b) KK=11 & 12
under fig. 3(d)-DD for E=18 MeV
using the TPS eMC
for direct electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
DD (Gy/100MU)
Z_c (cm)
$a_0(E)$
Z_2

(b)

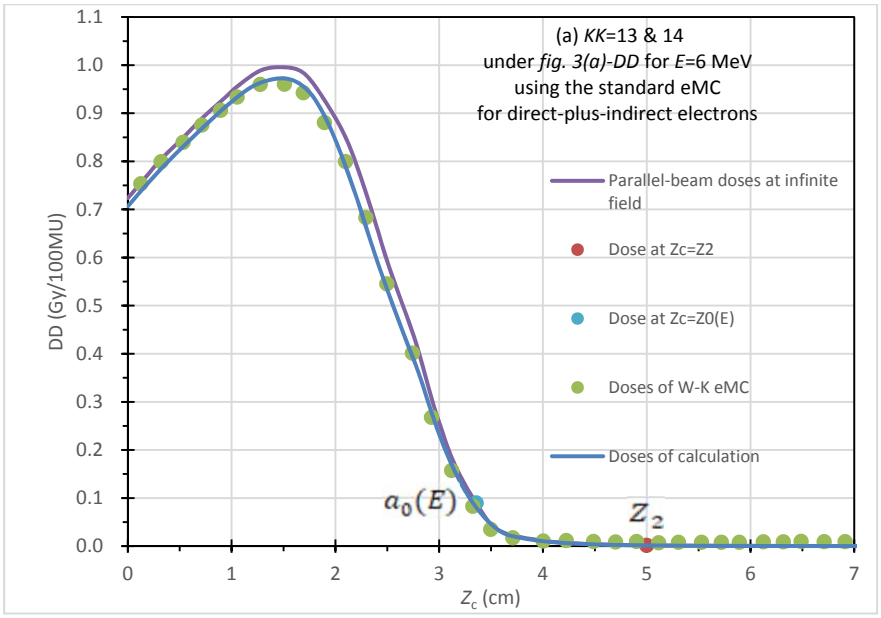


(c)

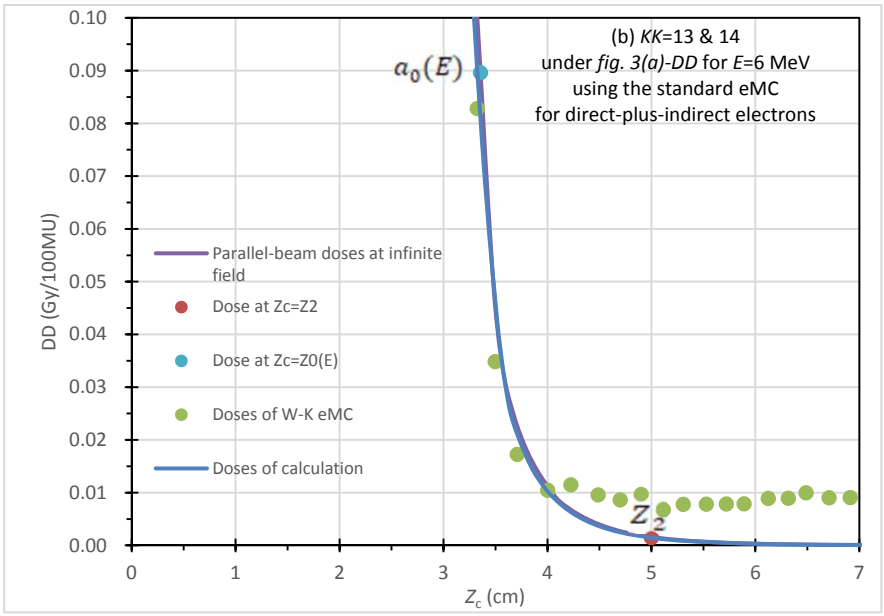


(d)

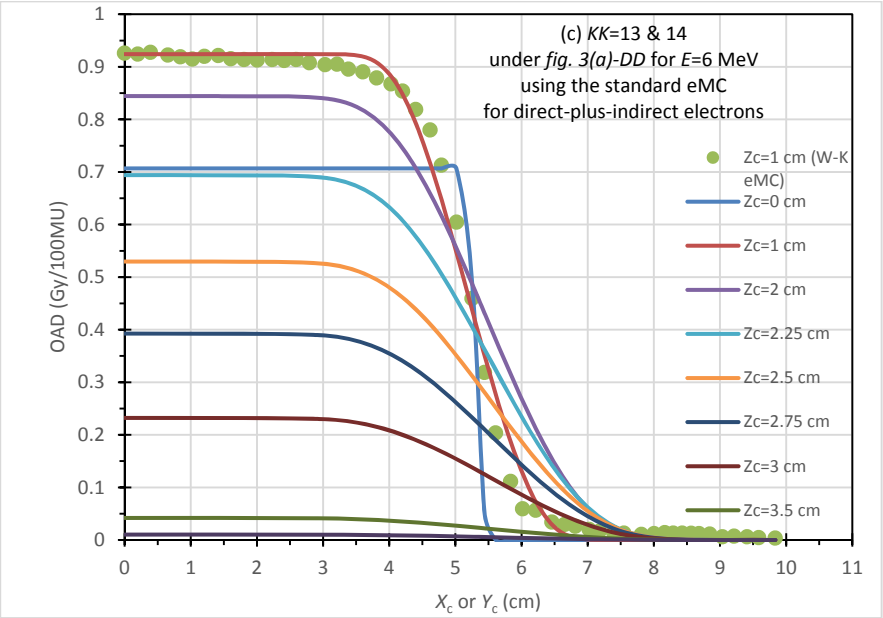
Supp. Fig. 8 DD or OAD datasets due to the direct electron beams for each of (a-d) with respect to *KK*=11 and 12 (*E*=18 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the TPS eMC, copied from the W-K eMC dose datasets.


(a) KK=13 & 14
under fig. 3(a)-DD for E=6 MeV
using the standard eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

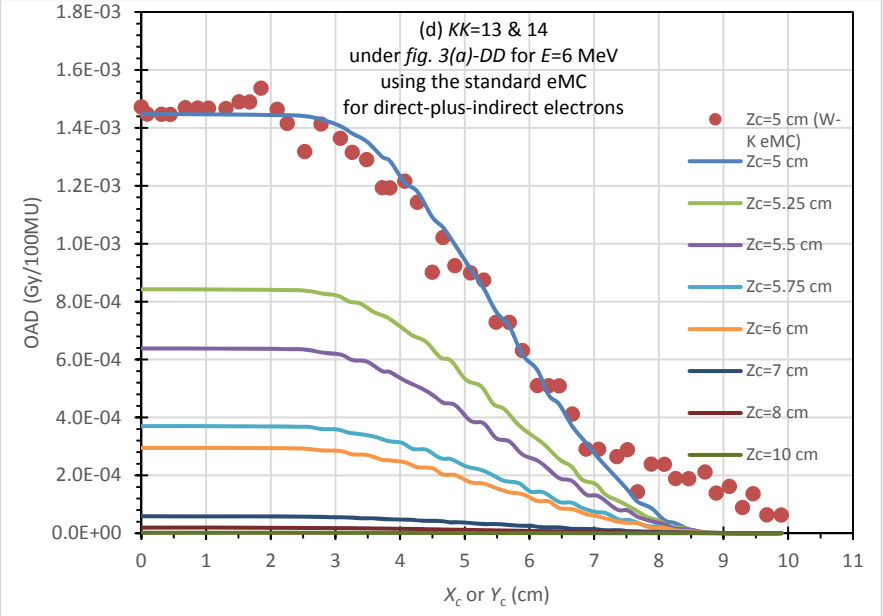
(a)


(b) KK=13 & 14
under fig. 3(a)-DD for E=6 MeV
using the standard eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(b)

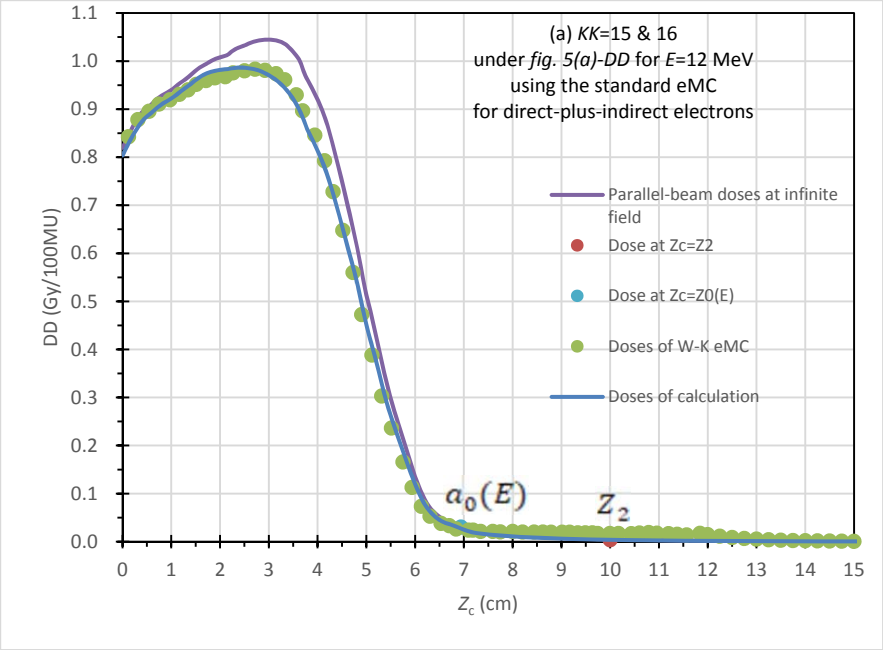


(c)

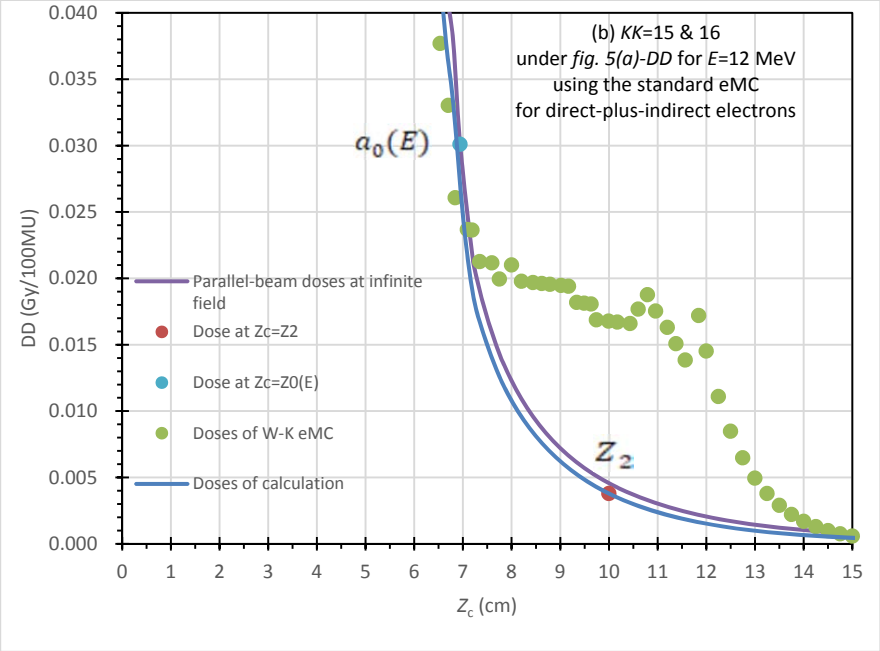


(d)

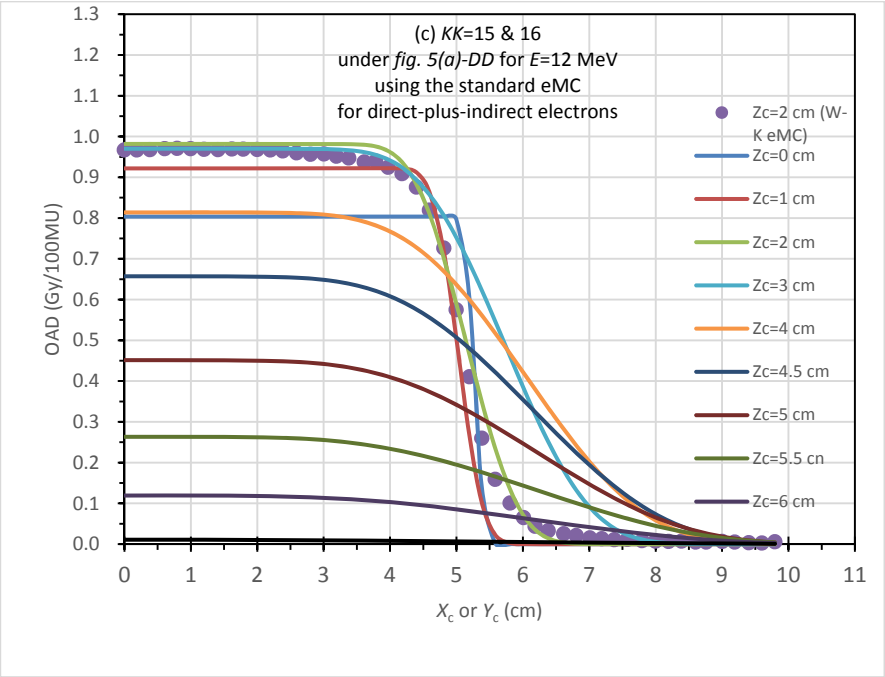
Supp. Fig. 9 DD or OAD datasets due to the direct-plus-indirect electron beams for each of (a-d) with respect to *KK*=13 and 14 (*E*=6 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the standard eMC, copied from the W-K eMC dose datasets.


(a) KK=15 & 16
under fig. 5(a)-DD for E=12 MeV
using the standard eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(a)


(b) KK=15 & 16
under fig. 5(a)-DD for E=12 MeV
using the standard eMC
for direct-plus-indirect electrons
$a_0(E)$
Z_2
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
DD (Gy/100MU)
Z_c (cm)

(b)



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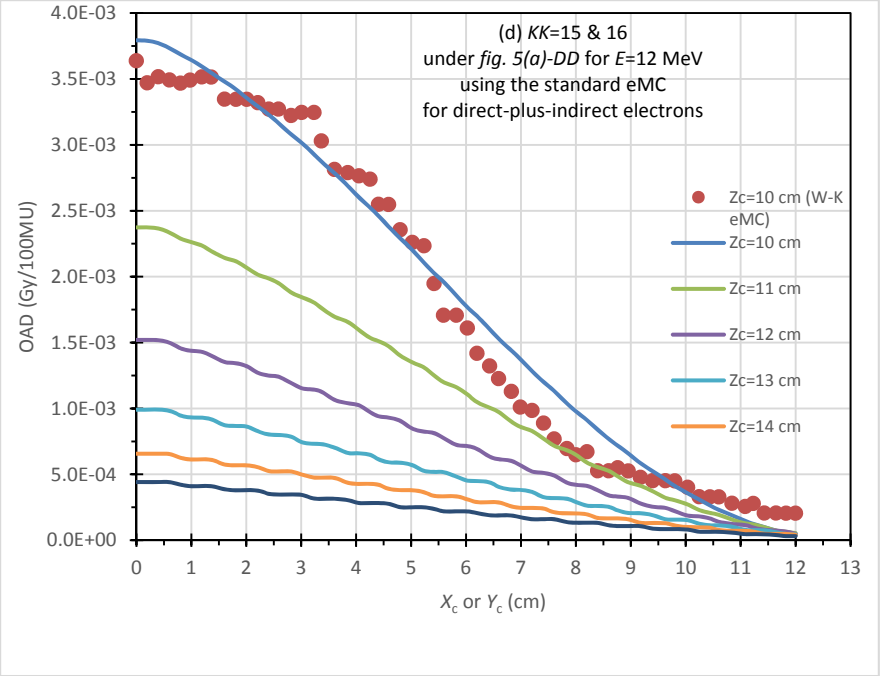
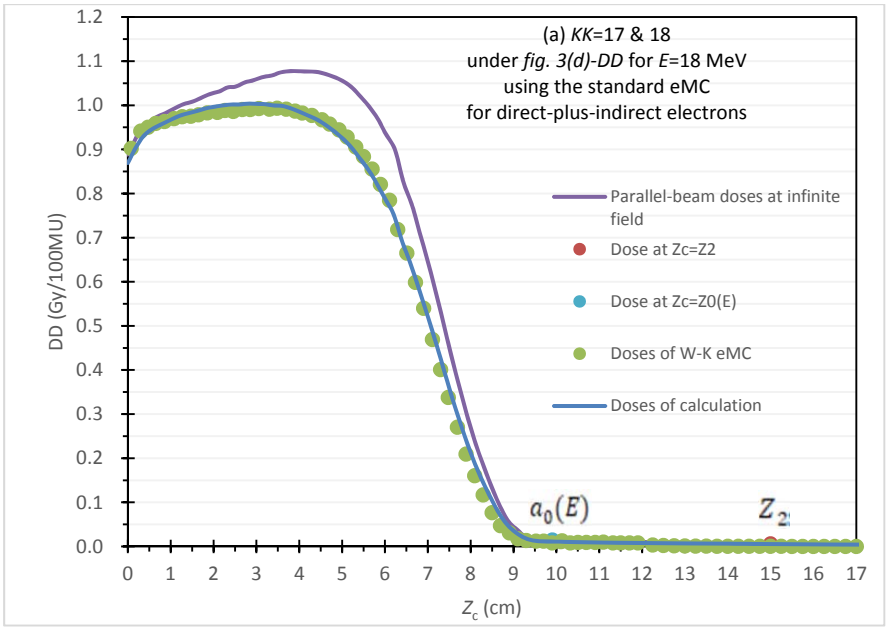
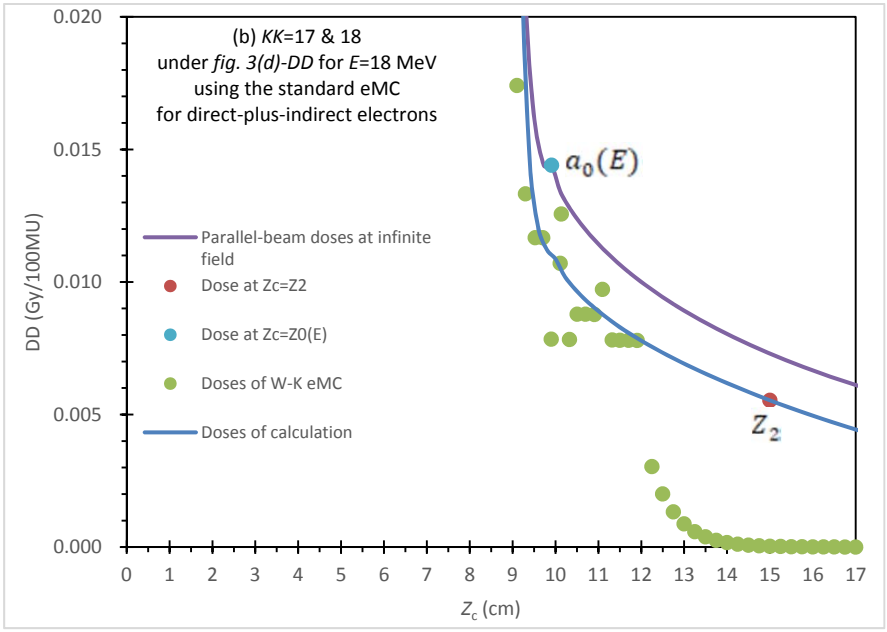


(d)

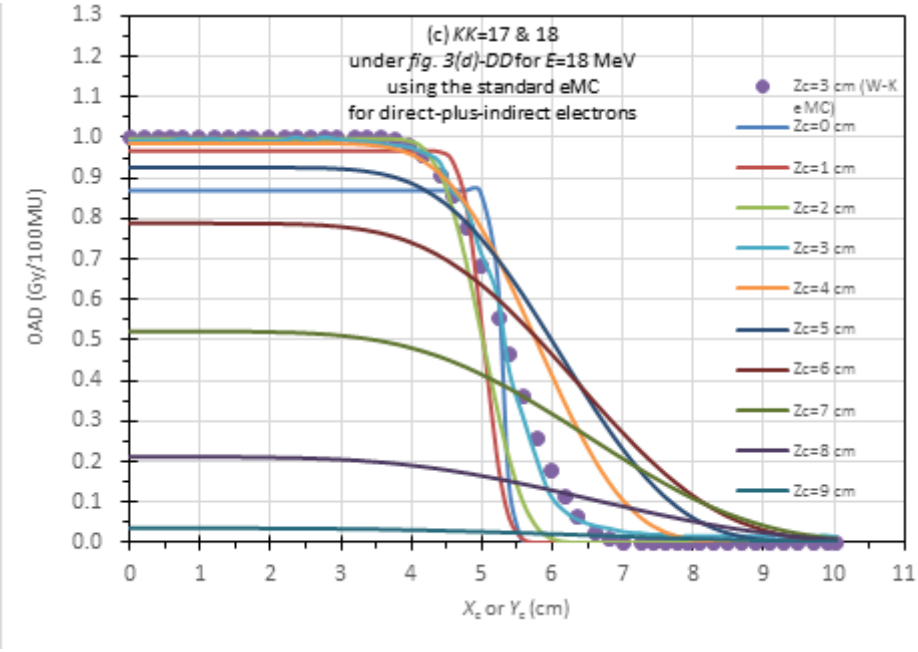
Supp. Fig. 10 DD or OAD datasets due to the direct-plus-indirect electron beams for each of (a-d) with respect to *KK*=15 and 16 (*E*=12 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the standard eMC, copied from the W-K eMC dose datasets.


(a) KK=17 & 18
under fig. 3(d)-DD for E=18 MeV
using the standard eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
DD (Gy/100MU)
Z_c (cm)
$a_0(E)$
Z_2

(a)


(b) KK=17 & 18
under fig. 3(d)-DD for E=18 MeV
using the standard eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
DD (Gy/100MU)
Z_c (cm)
$a_0(E)$
Z_2

(b)



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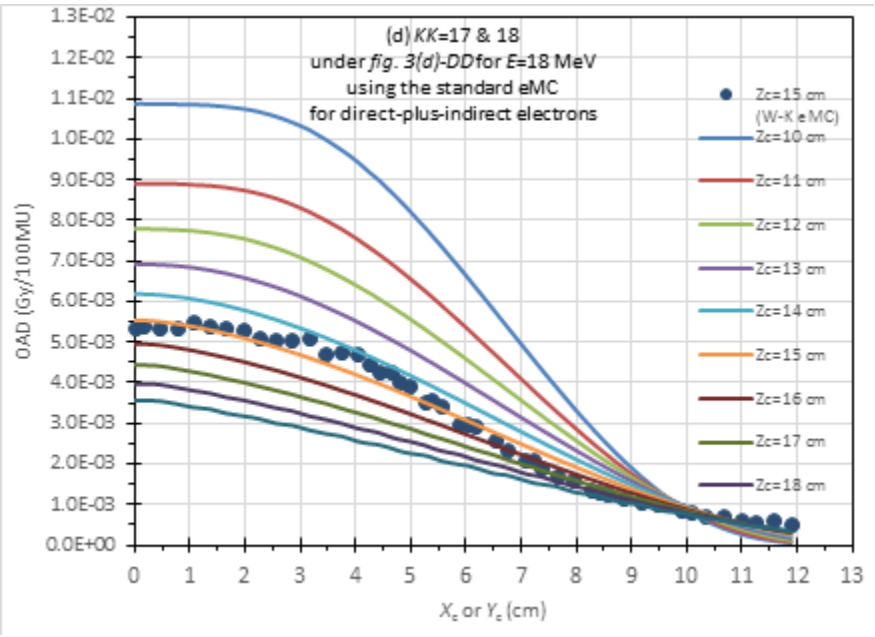
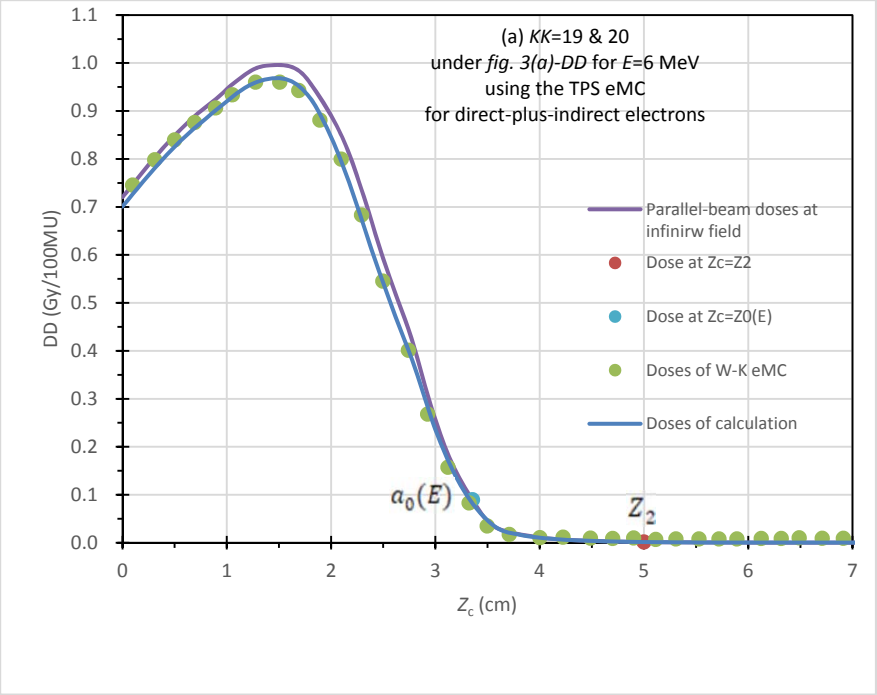
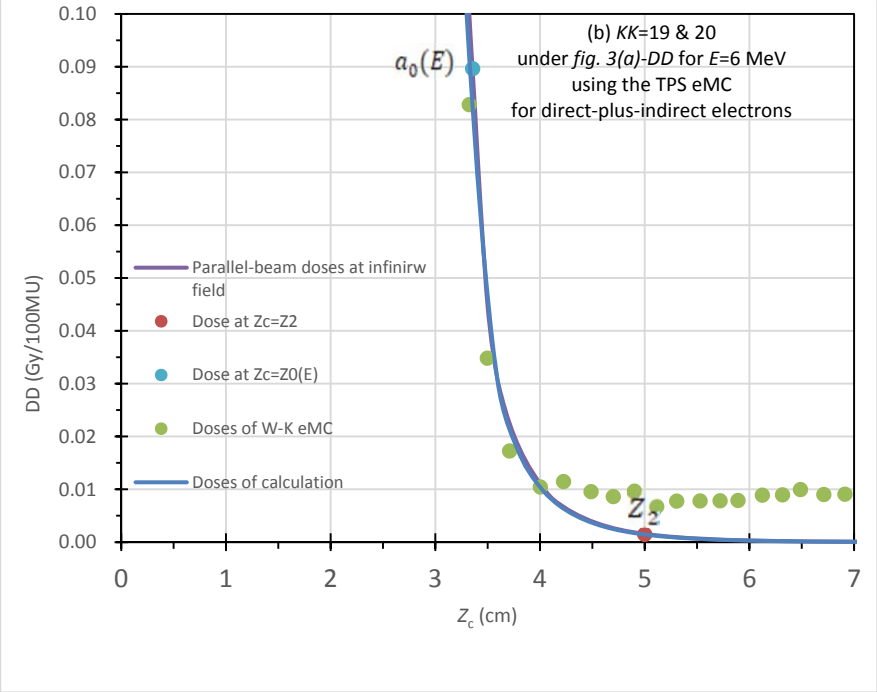


(d)

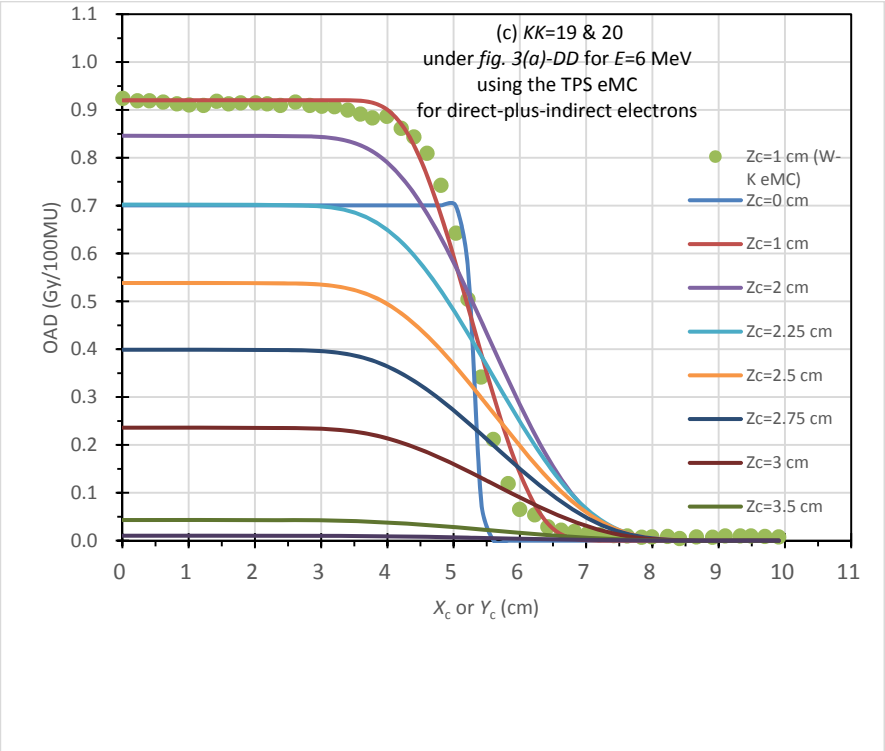
Supp. Fig. 11 DD or OAD datasets due to the direct-plus-indirect electron beams for each of (a-d) with respect to *KK*=17 and 18 (*E*=18 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the standard eMC, copied from the W-K eMC dose datasets.


(a) KK=19 & 20
under fig. 3(a)-DD for E=6 MeV
using the TPS eMC
for direct-plus-indirect electrons
DD (Gy/100MU)
Zc (cm)
Parallel-beam doses at infinirw field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
a0(E)
Z2

(a)


(b) KK=19 & 20
under fig. 3(a)-DD for E=6 MeV
using the TPS eMC
for direct-plus-indirect electrons
DD (Gy/100MU)
Zc (cm)
Parallel-beam doses at infinirw field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
a0(E)
Z2

(b)



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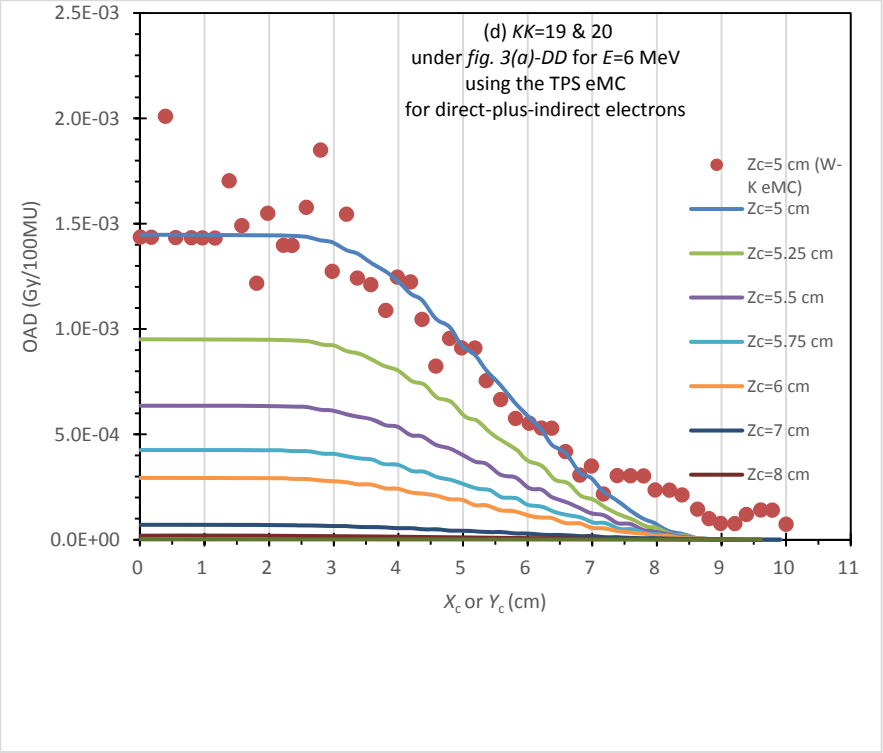
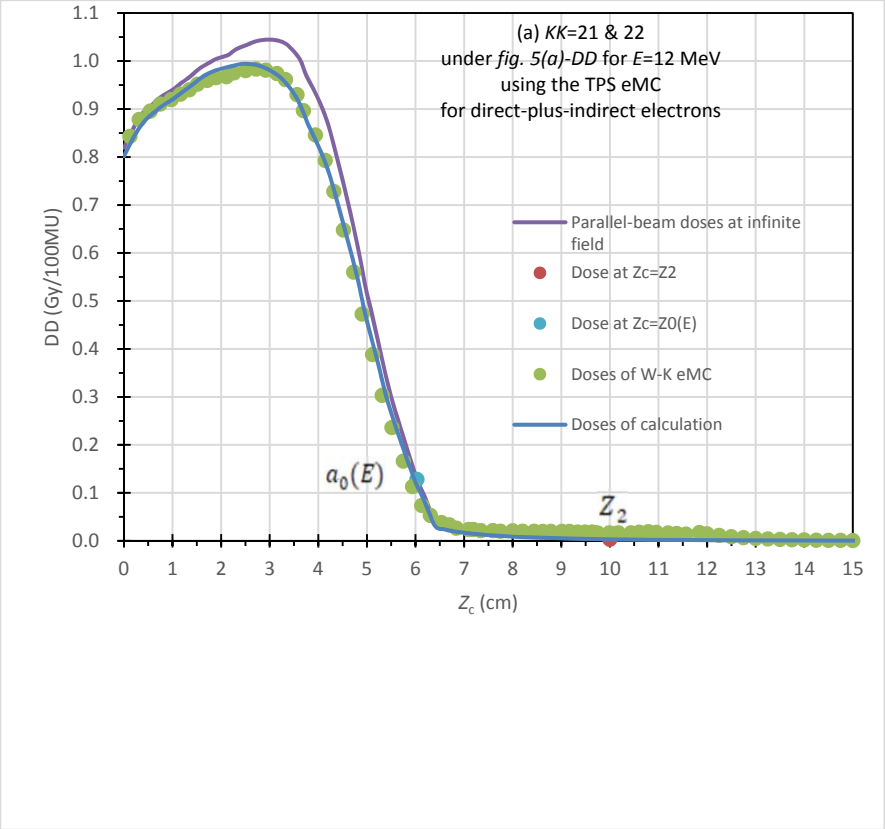
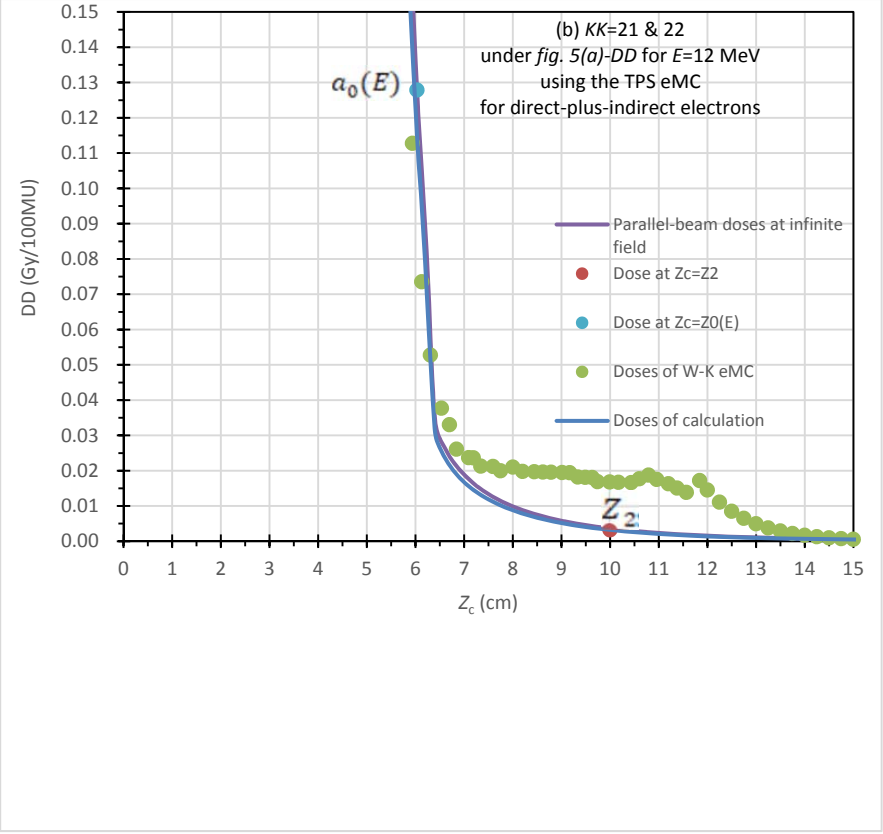


(d)

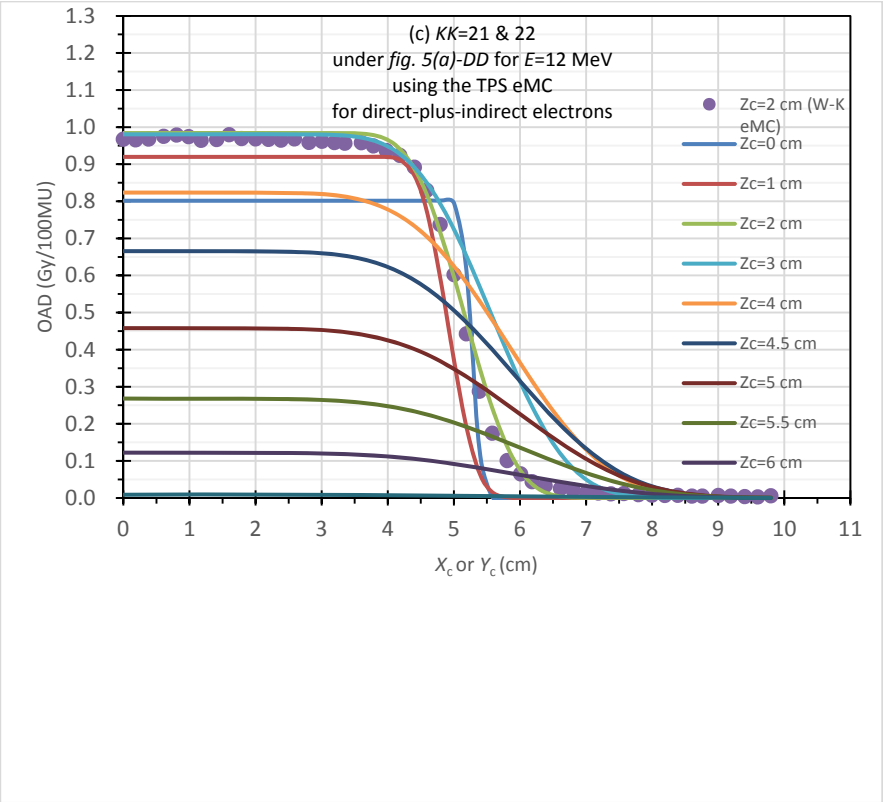
Supp. Fig. 12 DD or OAD datasets due to the direct-plus-indirect electron beams for each of (a-d) with respect to *KK*=19 and 20 (*E*=6 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the TPS eMC, copied from the W-K eMC dose datasets.


(a) KK=21 & 22
under fig. 5(a)-DD for E=12 MeV
using the TPS eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

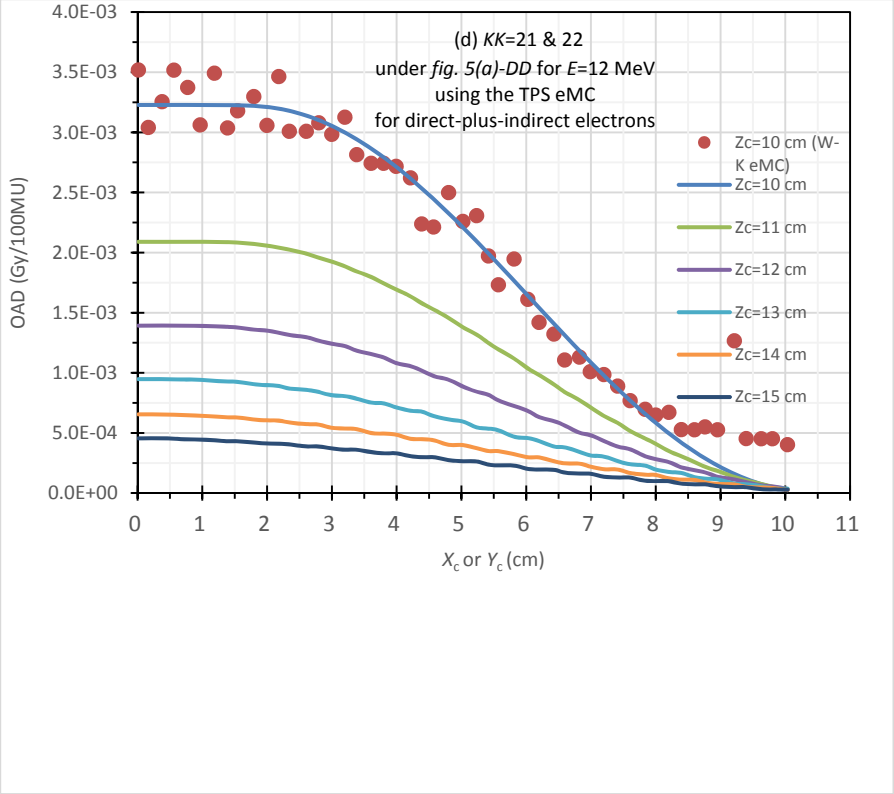
(a)


(b) KK=21 & 22
under fig. 5(a)-DD for E=12 MeV
using the TPS eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(b)

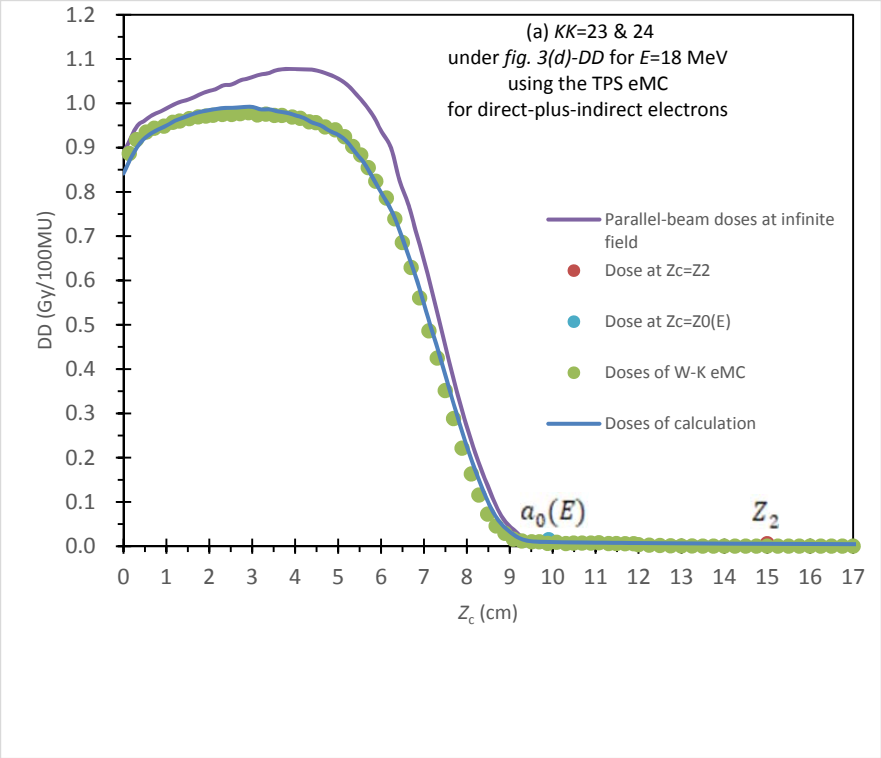


(c)

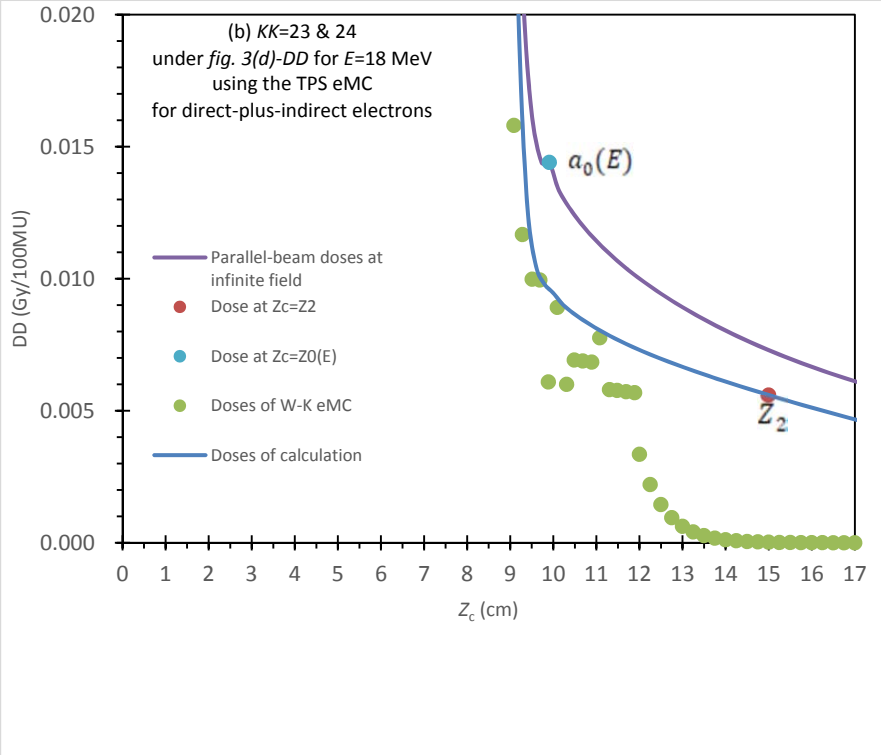


(d)

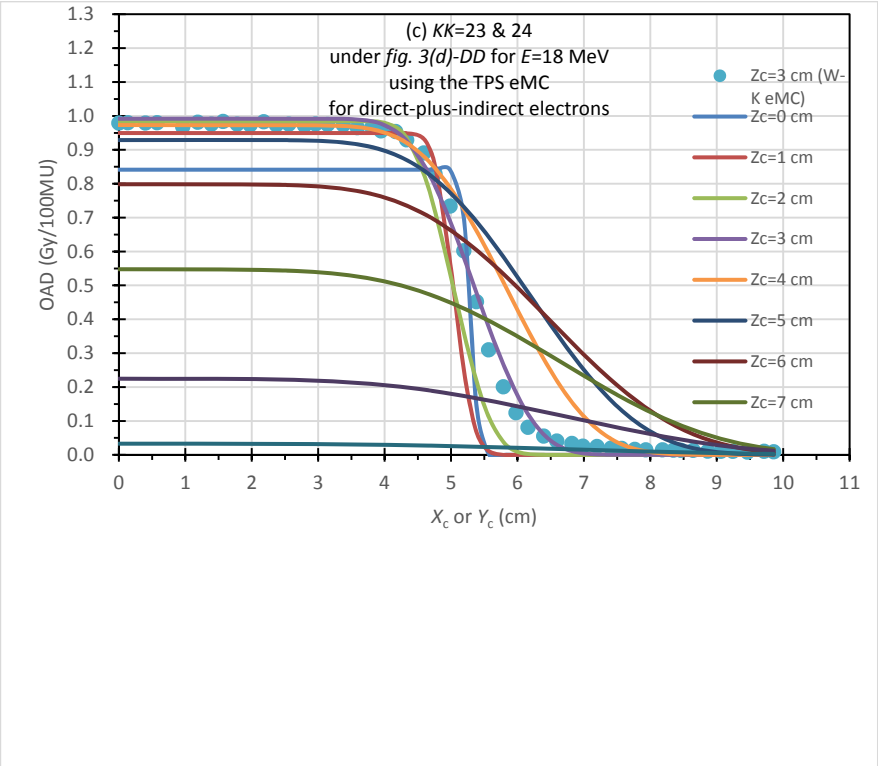
Supp. Fig. 13 DD or OAD datasets due to the direct-plus-indirect electron beams for each of (a-d) with respect to *KK*=21 and 22 (*E*=12 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the TPS eMC, copied from the W-K eMC dose datasets.


(a) KK=23 & 24
under fig. 3(d)-DD for E=18 MeV
using the TPS eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

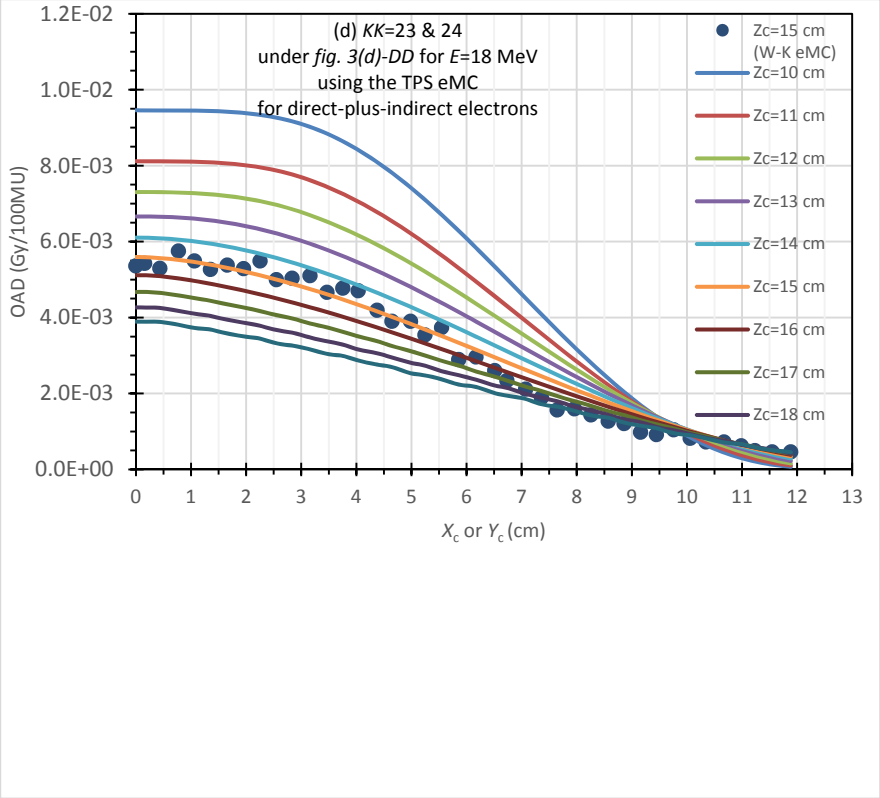
(a)


(b) KK=23 & 24
under fig. 3(d)-DD for E=18 MeV
using the TPS eMC
for direct-plus-indirect electrons
Parallel-beam doses at infinite field
Dose at Zc=Z2
Dose at Zc=Z0(E)
Doses of W-K eMC
Doses of calculation
$a_0(E)$
Z_2
DD (Gy/100MU)
Z_c (cm)

(b)



(c)



(d)

Supp. Fig. 14 DD or OAD datasets due to the direct-plus-indirect electron beams for each of (a-d) with respect to *KK*=23 and 24 (*E*=18 MeV), where the dotted mark set expresses the DD or OAD dataset yielded directly using the TPS eMC, copied from the W-K eMC dose datasets.